

# THE IRON AGE

A Review of the Hardware, Iron, and Metal Trades.

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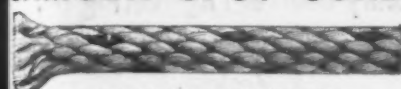
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Ad. on Page 23.

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See Page 116

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# THE IRON AGE

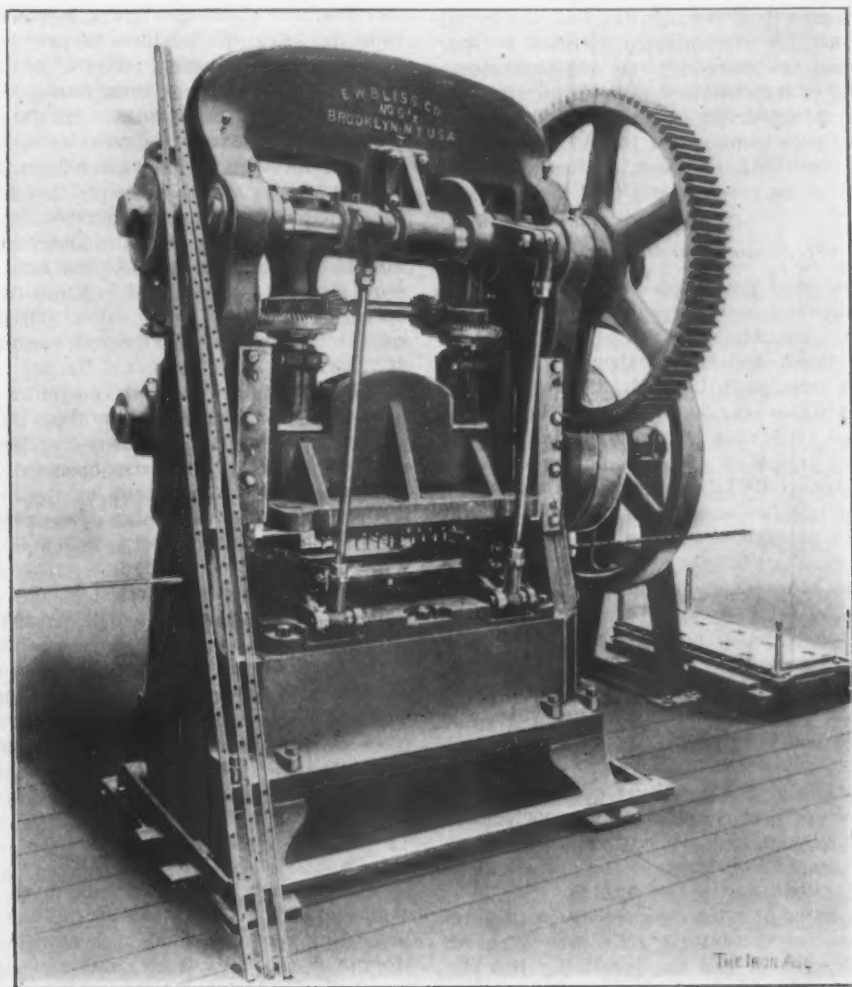
New York, Thursday, January 26, 1905.

## A Special Bliss Punching Attachment.

A number of special punching operations may be accomplished with the press equipped as shown in the view herewith. The press itself is the regular No. 6½ made by the E. W. Bliss Company, Brooklyn, N. Y., and with the attachment is intended particularly for punching holes in parts of agricultural implements. It was recently completed for a foreign customer and is interesting on account of the difficult class of work which it will

be seen by close inspection of the illustration that the punches near the center of the row are the longest and that the others gradually decrease in length toward either end. It has been found that this arrangement tends to do away with the breaking of the punches, as it allows the stock to stretch from the center, which it could not do if the outer punches entered first.

In addition to the work already described the press is adapted for punching a number of holes in sheets at one operation. This work is done without the use of the



A No. 6½ Bliss Press Equipped with a Special Multiple Punching Attachment.

perform. One of the operations is the simultaneous punching of ten ½ x ½ inch holes in a rod 1 inch wide and ¾ inch thick. Under ordinary conditions the punching would tend to distort the stock and make it bulge out at each of the punched holes, but by means of a special toggle clamp shown on the press such bulging is avoided and the stock is left perfectly true and straight.

Samples of punched rods are shown in the illustration leaning against the press and another may be seen in position for punching. Two holes 2 inches square are cored in the sides of the press frame on a level with the die through which the rod stock is fed. As the slide descends toggle clamps, operated from a rock shaft in front of the cam shaft, grip the stock firmly and confine it while the punches do their work. As the slide recedes the clamps open and allow the operator to shift the piece along into position for the next punching. It will

toggle clamps, which can be readily disconnected. By the side of the outboard bearing in the illustration may be seen one of the dies for sheet punching. Any number of holes up to ten can be punched at a time and of a size ½ inch square or ½ inch in diameter. A sheet ½ inch thick can very quickly be perforated in any pattern desired—i. e., with rectangular rows or staggered, the work being fed through from front to back, instead of sidewise, as in the case of the rods. The area of the bed of the press is 26 x 53 inches and the total weight is about 27,000 pounds.

The Chicago Automobile Show will be held at the Coliseum, February 4 to 11. Space has been reserved for the cars of 170 exhibitors. Samuel A. Miles will be general manager of the exhibition.

### Census of Telephones and Telegraphs.

The Bureau of the Census has just published the fourth of a series of reports on the generation and utilization of electric current during the year ending December 31, 1902. The present bulletin concerns telephones and telegraphs, the subjects of the three preceding it being street and electric railways, electric light and power plants and municipal electric fire alarm and police patrol systems. All of these reports were prepared under the direction of W. M. Steuart, chief statistician for manufactures.

Although the commercial telephone has developed entirely during the past 30 years, the bulletin shows that it is now of vastly greater importance than the telegraph. The extension of the long distance service, the introduction of the commercial systems into rural districts, the establishment of independent rural lines, the development of such lines in some instances into mutual systems with an exchange and more extensive service and the rapidly increasing use of the telephone in private dwellings all point to a growth of the industry that can hardly be realized. In 1902 the wire mileage operated by commercial and mutual telephone systems together constituted 70.6 per cent. of the combined mileage for such systems and commercial telegraph systems, and these same telephone systems gave employment to 70.7 per cent. of the wage-earners, paid 65.5 per cent. of the wages, received 68 per cent. of the revenue and paid 67.8 per cent. of the expenses.

#### Telephone Systems.

At the census of 1880 the telephone industry was in embryo, few commercial companies being in operation prior to that year. The number of miles of wire in use in 1902 was 141 times and the number of telephones nearly 43 times as great as in 1880. In 1880 the population of the United States was 50,155,783 and the number of telephones of all kinds was 54,319, giving an average of 923 persons per telephone; the population of continental United States in 1902 is estimated at 78,576,436, and the number of telephones operated in that year was 2,315,297, giving an average of 34 persons per telephone.

The total revenue of all telephone systems, from operation and all other sources, amounted to \$86,825,536, or an average of \$37.50 per telephone; of this amount 94 per cent. was derived from actual operation. The total operating expenses amounted to \$56,867,062, or \$24.56 per telephone; the total net income was \$21,660,765, or \$9.36 per telephone; and the net surplus for the year was \$6,604,660, or \$2.88 per telephone.

The strong tendency toward concentration is shown by the fact that although only 194 telephone systems operated 1000 telephones or over, these systems reported 72.5 per cent. of the telephones, 87.5 per cent. of the gross receipts from operation, 89.3 per cent. of the operating expenses and 57.5 per cent. of the net surplus.

Of the 4,850,486 miles of wire reported by commercial and mutual systems in 1902, 48.9 per cent. was overhead, 34.8 per cent. underground, and the remaining 16.3 per cent. represented circuit miles of wire in overhead and submarine cables.

The commercial and mutual systems reported 2,315,297 telephones as in operation during 1902. Of these 10,361 were public exchanges, 80,870 were public or semipublic stations or telephones used by the general public upon payment of a stated fee, and 2,224,066 were private telephones.

There were 2,178,366 subscribers reported, giving an average of approximately 1 telephone to each subscriber.

The estimated number of messages or talks during the year over the wires of the commercial and mutual systems was 5,070,554,553; for the 4985 independent farmer or rural lines no estimates could be obtained. Of the total number of messages reported 97.6 per cent. were local, and the remaining 2.4 per cent. were long distance and toll.

The commercial telegraph messages sent during 1902 numbered 90,834,789, or less than one fifty-sixth of the telephone messages, and the pieces of first-class mail matter that passed through the mails during the same year

numbered 4,611,271,580, or not quite as many as the telephone messages.

It is impossible to make an exact segregation of the statistics so as to show the number of lines, the wire mileage and the number of telephones devoted primarily to telephone work in the country as distinct from the urban districts. Approximately, however, there were 21,577 such lines, of which 72.3 per cent. were owned and operated by commercial systems, 4.6 per cent. were the mutual systems, and the remaining 23.1 per cent. were independent farmer or rural lines. The total length of wire was 259,306 miles, or an average length of about 12 miles per line. The total number of telephones was 266,968, giving an average of about 12 telephones to each line and a little less than 1 mile of wire per telephone.

#### Telegraph Systems.

The commercial telegraph systems numbered 25 in 1902, as compared with 77 in 1880. This striking decrease is due, however, to the number of consolidations which have taken place, the magnitude of the equipment and business showing a great increase. At the present time the telegraph business is practically controlled by two companies, yet the number of miles of wire in operation in 1902 was more than four times, the number of messages almost three times, and the receipts from messages more than twice as great as in 1880. The average rate per message in 1902, after deducting the number of cable messages and the receipts therefrom, was 31 cents, as compared with 43 cents in 1880.

The total receipts of the commercial telegraph companies in 1902 amounted to \$40,930,038, of which 86.2 per cent. represented the gross receipts from operation. The operating expenses amounted to \$26,592,411, the net income to \$9,982,004 and the net surplus for the year to \$3,725,311.

The commercial telegraph companies reported 1,318,350 miles of wire in operation in 1902, but also made a report of 1,307,046 miles as owned or leased. Of the latter mileage 62.5 per cent. was operated by the single, or Morse, system, 14.1 per cent. by the duplex system, 22.6 per cent. by the quadruplex system, and the remaining eight-tenths of 1 per cent. by machine or automatic systems.

The commercial telegraph messages sent during 1902 numbered 91,655,287, of which 820,498 were cable messages.

There were 684 railway companies that reported the operation of telegraph or telephone lines in connection with the transportation business. Along their right of way these companies had 1,127,186 miles of single telegraph and telephone wire, of which they owned 21.5 per cent.

This report is the work of T. C. Martin, expert special agent.

**The Chicago Traction Problem to be Solved.**—One of the largest traction deals in the history of Chicago is just being consummated. A syndicate headed by J. P. Morgan & Co., New York, and actively represented by Marshall Field, John J. Mitchell and P. A. Valentine, Chicago, has made a public offer to all stockholders of the Chicago City Railway Company to purchase their stock at \$200 a share, provided more than half the 180,000 shares are thus offered. If the syndicate secures the company, it is stated that it will expend immediately something like \$15,000,000 in improving and increasing equipment, rolling stock, &c. This will mean larger power houses and large expenditures for engines, boilers and other equipment. Inasmuch as all street car lines in Chicago will be, when this deal is completed, owned largely by the same coterie of capitalists, it will be easy for them to come to the City Council with a plan which will permit of settlement of franchise disputes on a basis that will warrant the expenditure of sufficient money to put the equipment of all the roads on a modern basis.

The Pittsburgh Coal Company has leased a site of ground on Fifth avenue, Pittsburgh, and will erect a 10-story building, to be used exclusively for office purposes.



### The Connecticut-Louisiana Battle Ship Contest.

WASHINGTON, D. C., January 24, 1905.—The Secretary of the Navy has transmitted to the House of Representatives a report showing the cost to September 30, 1904, of inspection and construction of the battle ships Connecticut at the New York navy yard and Louisiana at the Newport News Shipbuilding & Dry Dock Company's shipyard. While the report cannot be said to contain any misstatements it would seem almost to justify the wholly erroneous statements that have appeared in the daily press asserting among other things that, although the keels of the two vessels were laid within a month of each other and their launching took place within a period of 30 days, the Louisiana up to September 30 had cost nearly \$1,250,000 more than the Connecticut.

An analysis of the figures submitted with Secretary Morton's report, however, shows not only that there is no basis for the suggestion that the construction of the Louisiana has been more costly than that of the Connecticut, but also that these reports, which are required by the naval appropriation act to be rendered to Congress annually, are worthless for the purpose of supplying intelligible data for comparisons of these two vessels. The first report under this act was forwarded to Congress a year ago, but at that time so little work had been done upon the vessels that the figures submitted were of no value. The keel of the Louisiana was laid February 7, 1903, and she was launched August 27, 1904, on which date the percentage of hull work completed was 54.5. The keel of the Connecticut was laid March 10, 1903, and she was launched September 29, 1904, when the percentage of hull work completed was 53.59.

Thus there was a difference of only one day in the length of time elapsing after the laying of the keel and before launching the two vessels, and a margin of less than 1 per cent. of the percentage of hull work completed when the launching took place. According to Secretary Morton's report, however, it appears that on September 30, one day after the launching of the Connecticut, the total cost of the Louisiana was \$3,548,250, as compared with \$2,334,937 for the Connecticut.

From a table showing in detail the various items of expenditure it appears that while armor to the value of \$121,087 has been delivered for the Connecticut the deliveries on account of the Louisiana aggregate no less than \$1,168,815. Inasmuch as the armor is supplied to both vessels by the Government and upon contracts which are identical as to weights and prices, it is clear that no less than \$1,047,728 of the apparent discrepancy is thus accounted for. It also appears that the Newport News Shipbuilding & Dry Dock Company had on hand on September 30 material valued at \$230,369, while that at the New York yard for use of the Connecticut was valued at only \$125,143. The payments on account of the Louisiana for nickel steel protective deck armor amounted to \$327,456, while on account of the same item for the Connecticut but \$177,679 has been expended. As these plates are in all respects identical in the two ships it is apparent that the Louisiana has received a larger quantity of her plates by \$149,777 than the Connecticut. These three items make a total of \$1,302,731 worth of material delivered for use of the Louisiana in excess of that received at the New York yard on account of the Connecticut, which more than wipes out the difference in the cost of the two vessels to September 30.

#### Built on Different Systems.

But these are only a few of the items of cost as shown by Secretary Morton's tables, a careful examination of which demonstrates that the two vessels are being built on somewhat different systems of construction, and that while in point of labor actually performed the difference in the percentage of completion is not great, yet in quantity and cost of the material received there is a wide margin in favor of the Louisiana. The Louisiana is also charged with the "cost of inspection at works of contractor," an item of \$11,250, which does not appear at all in the case of the Connecticut, although it is obvious that the experts of the Bureau of Construction and Repair

have been obliged to devote as much time to the inspection of the Connecticut as to the Louisiana.

#### Report by the Labor Bureau.

It is understood that the Department of Commerce and Labor, as a part of the eight-hour investigation, has caused a comparison to be made of the labor on the Connecticut and Louisiana for the purpose of shedding some light on the general subject of the desirability of an eight-hour day. The correspondent of *The Iron Age* is in position to state that this investigation will show that a larger amount of material has been worked into the hull of the Connecticut per man per hour than into the Louisiana, but the Labor Bureau will explain this fact by describing the conditions under which the two vessels are being constructed. It will also be shown that the wages at the New York yard are more than enough higher than those at Newport News to make the labor cost of the hull of the Connecticut considerably greater than that of the Louisiana.

W. L. C.

### The Connellsville Coke Trade in 1904.

The Connellsville *Courier* of January 21 presents statistics of the Connellsville coke trade in 1904 which differ from those given by the *Scottdale Independent* and reprinted in *The Iron Age* of January 12. The *Courier's* statement is in part as follows:

The Connellsville and Lower Connellsville regions in 1904 had an aggregate coke output of 12,427,468 tons. This is over 900,000 tons short of the output in 1903. The aggregate output of the two regions that year was nearly 800,000 tons less than it was in 1902, so that in two years there has been a slump in the yearly production of 1,700,000 tons, compared with the banner year.

While the average weekly production was at times as great as it was during 1903, over 250,000 tons, there was no uniformity either in prices or demand. In April there was a spasmodic impetus given the trade by price cutting, which a month's business dissipated. Throughout the summer and until well into September business was bad. Renewed confidence followed and December launched the present quarter under circumstances that promise to make 1905 a banner year in the coke industry.

A most disappointing feature was the low average price. Valuing the merchantable product of the regions during the four quarters at the market quotations current in those periods, the average price of Connellsville coke for the year just closed is estimated at \$1.75 per ton, as against \$3 per ton in 1903. At this rate the total value of the output in 1904 was \$21,748,069, or \$18,287,621 less than the gross revenue from the previous year's output.

The following tabulated statement shows the total number of ovens at the close of each year, the annual output, average price and gross revenue of the region from 1900 to date:

Year.	Total ovens.	Tons shipped.	Average price.	Gross revenue.
1900.....	20,954	10,166,234	\$2.70	\$27,448,832
1901.....	21,575	12,609,949	1.95	24,589,400
1902.....	26,329	14,138,740	2.37	33,508,714
1903.....	28,092	13,345,230	3.00	40,035,690
1904.....	29,119	12,427,468	1.75	21,748,069

The year closed with daily average shipments of 1864 cars, which was 56 cars a day short of the average shipments during November.

The skylights used in the construction of the new steel foundry of the Pennsylvania Railroad at South Altoona, Pa., which were described in our issue of January 5, 1905, cover an area of over 21,000 square feet. They were installed on the "Paradigm Skylight System" by Arthur E. Rendle, 428 Eleventh avenue, New York City.

The bill permitting the use of that portion of the monument grounds for the purposes of the American Railway Appliance Exhibition to be held in Washington, D. C., May 3 to 14, inclusive, in connection with the International Railway Congress, has been signed by the President.

### The Prentice Vertical Drill.

The gear driven upright drill shown in the accompanying illustrations is built by the Prentice Bros. Company, Worcester, Mass. As compared with the ordinary drill of its type, the most interesting mechanical feature is the arrangement whereby 16 changes of speed are obtained without shifting the driving belt. Fig. 1 shows a general view of the drill, Fig. 2 a vertical elevation and Fig. 3 a detail of the change gear box.

The driving belt runs on a single pulley, A, Fig. 2, and power is communicated to the drill spindle through the

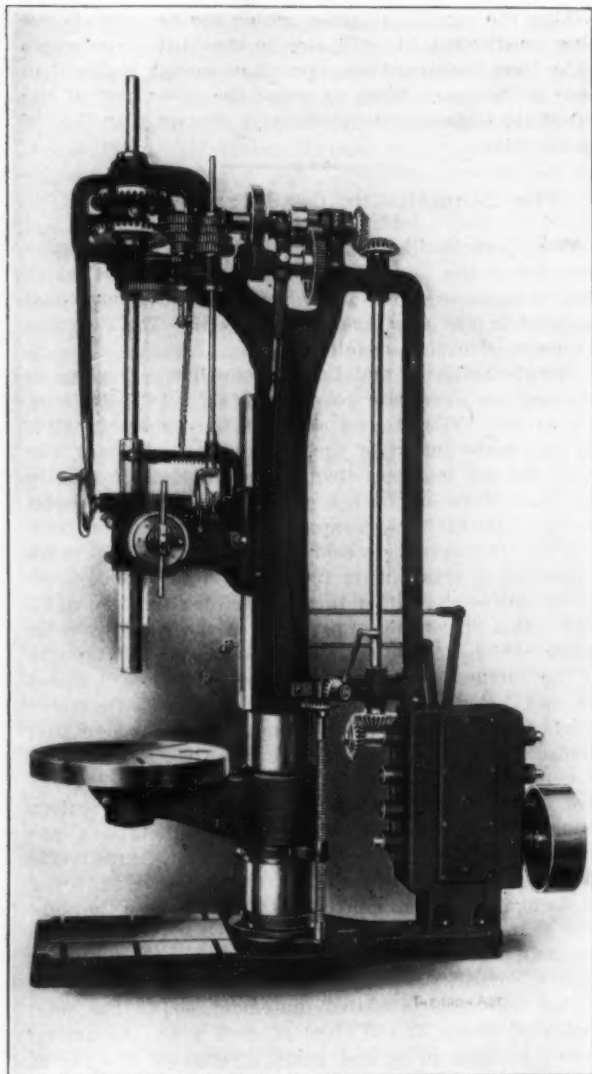


Fig. 1.—The New Gear Driven Upright Drill Built by the Prentice Bros. Company.

gear box C. The handles D, E and F, situated within easy access of the operator, actuate the spools U, V and W, which, in conjunction with friction disks and friction rings shown in Fig. 3, give eight changes of speed. The principle of action of this gear box is very similar to that described in connection with the Prentice lathe, as illustrated in *The Iron Age* of December 1, 1904. The levers D, E and F move independently, and each controls two friction clutches. Between the limits of their movements both clutches are disengaged when any one of the levers is in its intermediate position, and the drill spindle is idle. In other words, it is necessary that one or the other of the friction clutches operated by each lever be engaged in order to drive the spindle. Therefore it is impossible for the operator to engage conflicting ratios of gearing. All speeds are in the same direction.

How the eight speeds are possible through the gear box will be understood by reference to Fig. 3. With the right hand clutch on the lower shaft engaged, the spur gear *a* drives the spur gear *b* on the intermediate shaft. The resulting speed of the spindle is still dependent upon the

position of the two upper clutches. The intermediate shaft carries the gear *d*, and when it is being driven by *b* gear *c* is running idly, and the gear *g* or *e*, depending upon the position of the clutch spool on the shaft carrying these gears. Assuming that this is also in its right hand position, then the gear *e* is driving the corresponding spindle and communicating power to the gear *f* or *i*, again depending upon the position of the clutch spool next above. Assuming again that the top right hand clutch is engaged, the shaft carrying the bevel gear *G* is being revolved by the gear *i*, giving one of the eight speeds. If the left hand clutch on the top spindle is engaged, the other clutches remaining as before, another speed of the gear *G* is obtained through the quill from gear *j*. This is driven from the gear *h*, on the second shaft, which is being driven by gear *e*, &c. Reversing each clutch gives

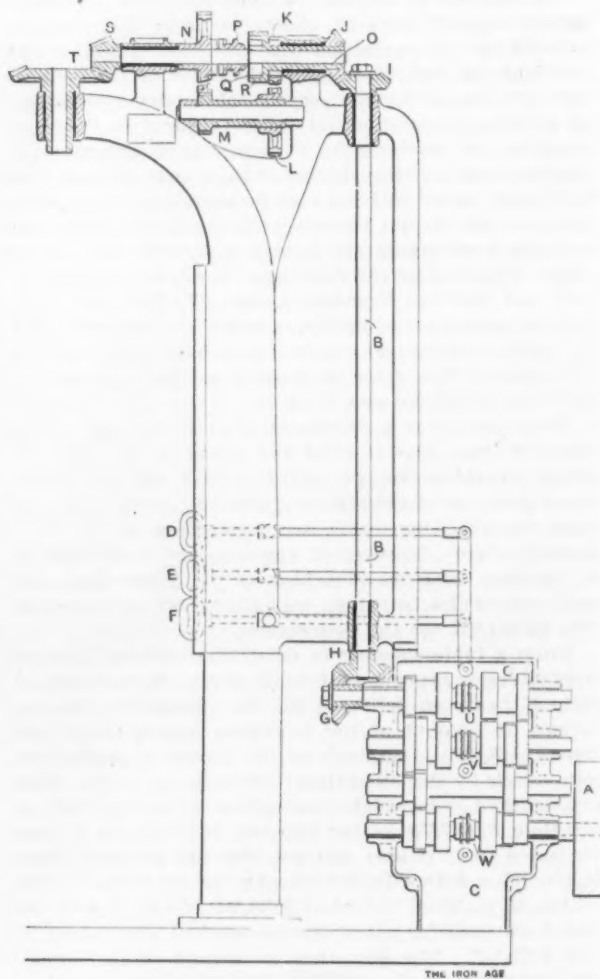


Fig. 2.—Vertical Elevation and Part Section of the Prentice Vertical Drill, Showing the Drive.

another speed for each of the different positions of the other clutches. As all of the gears are in mesh all are operative when all of the clutches are engaged in one or another of their positions, and those corresponding to the unengaged clutches merely run idly.

The bevel gears *G* and *H* drive the vertical shaft *B*, Fig. 2, at the top of which is the bevel gear *I* meshing with *J*. The gears *K*, *L*, *M* and *N* driven through the quill *O*, run continuously with the vertical shaft *B*. Through these gears two speeds are obtainable for each of the settings of the gear box *C*. When high spindle speeds are wanted the friction spool *P*, having clutch teeth on the end opposite the friction, is operated by a lever to engage the friction ring *Q* with the friction disk *R*, which is integral with the quill *O*. To run with the back gears and obtain a slower range of speeds, the clutch teeth on the friction spool *P* are engaged with the clutch teeth of the gear *N*, causing the horizontal top shaft to drive through the back gears. The horizontal shaft through the bevel gears *S* and *T* drives the drill spindle.



### The Air Power Plants for Pennsylvania Railroad Tunnels.

Work on the Pennsylvania Railroad tunnels under the North and East rivers is well under way, and the Ingersoll-Sergeant Drill Company, New York, which secured the contract for the compressed air equipments for both sections, is installing the machinery to furnish the compressed air which is to bear the greater part of the burden of driving the tubes. The work is to be done in two distinct sections, operations being carried on at both ends of each section simultaneously.

For the construction of the East River tunnel, the larger of the two contracts, the power plant has been subdivided into two sections, one on each side of the river, identical in capacity and character. At the Long Island City end, where the main power plant is located, preliminary work is being carried on with the assistance of a temporary air plant, comprising two Ingersoll-Sergeant class A compressors with a combined capacity of 1200 cubic feet of free air per minute.

The main compressing plants at either end of the tunnel are served by a battery of five 500 horse-power water tube boilers, and are equipped with Ingersoll-Sergeant positive air thrown air valves for both intake and

combination compressors, having steam cylinders of the same size as the machines above described, but coupled up in tandem to two pairs of duplex high and low pressure air cylinders of diameters 15½ and 22½ inches, respectively. As either set of compressing cylinders may be thrown into operation these combination machines serve the purpose of duplicate or reserve units for either the high or low pressure compressors. The boiler and engine foundations are complete, one of the large Corliss compressors is already in place and the remaining compressors are to follow at the rate of one unit per week.

Of the two sections the installation of compressing machinery at the terminals of the North River tunnel is much further advanced, all of the eight compressors, four on each side of the river, being placed on their foundations. These are served by two batteries of three 400 horse-power water tube boilers each, and are of the steam driven cross compound Corliss type, with duplex air ends, six being low pressure machines designed for a terminal pressure of 50 pounds, with atmospheric intake, and each having a free air capacity of 4000 cubic feet per minute. There are in addition two high pressure compressors of the same type, each having a free air capacity of 920 cubic feet per minute at a terminal pressure of 100 pounds from atmospheric intake, or 4000 cubic feet per minute from 50 pounds intake (from the low pressure machines) and a terminal pressure of 150 pounds. The low pressure units have the Ingersoll-Sergeant positive air thrown air inlet and discharge valves. The high pressure machines have the well-known piston inlet valve. The air is to be used for the same purposes and in the same manner as in the East River tunnels. The four power plants represent in the aggregate the largest installation of air compressing machinery ever made for general power purposes, they represent the highest type of the centralized power plant and their operation under the heavy service demands will be watched with the greatest interest.

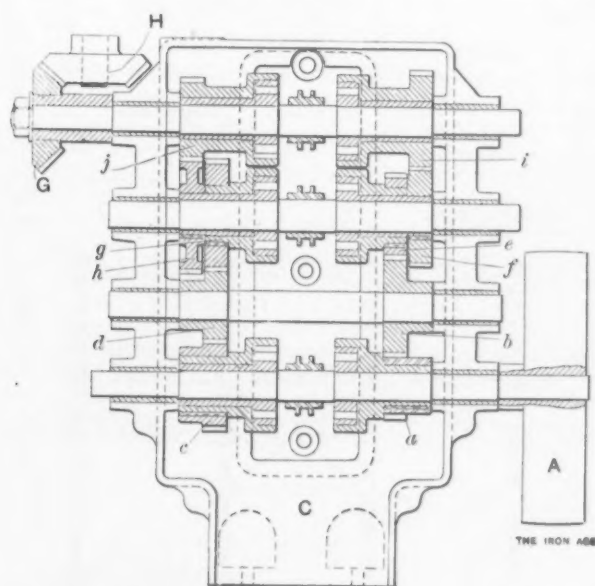


Fig. 3.—Detail of the Change Gear Mechanism of the Prentice Vertical Drill.

discharge, while the engineering details have been worked out so that a great flexibility is provided in piping and receiver connection by which any compressor or combination of compressors can be made to furnish air to any tube. The plants will together include 12 Ingersoll-Sergeant cross compound Corliss steam driven compressors with duplex air ends of the latest type, 8 of which are to be low pressure units, each with a capacity of 5000 cubic feet of free air per minute compressed to 50 pounds from atmospheric intake. The air from these machines is to be used for keeping out the water and mud as the shields are driven forward. The low pressure air is delivered to the tubes by four 10-inch mains on either side of the river. In addition to these low pressure units there are to be two high pressure compressors of the same general type, but designed to draw their intake either from atmosphere or from the discharge of the low pressure machines. In the former case the capacity of each is 1500 cubic feet of free air compressed to 100 pounds; in the second case it is from 2000 to 6000 cubic feet of free air per minute delivered at pressures up to 150 pounds, depending on the intake pressure. This high pressure air is distributed on the Long Island side through an 8-inch pipe line and on the New York side by a 6-inch main, and is to be used for running rock drills, driving concrete mixing machines, and possibly for pneumatic haulage. The remaining two units of the system are to be

**A Chicago River Freight Service.**—A new company has been formed in Chicago, known as the Chicago Car, Ferry & Lighterage Company. Its offices are at 39 to 45 W. Adams street and its officers are J. G. Johnson, president and treasurer; E. H. Talbot, vice-president and manager, and C. W. Lamborn, secretary. The company is opening up a freight depot on the east side of the north branch of the Chicago River between Erie street and Grand avenue, where it will receive freight for all points for delivery to ten of the leading railroads entering Chicago, as well as the steamboat docks. Its lighters will travel from between Fullerton avenue on the north branch to Campbell avenue on the southwest branch of the Chicago River, a distance of 10 miles. Provisions are to be made in the central depot for sorting freight, permitting the patrons to load their freight in a miscellaneous way and deliver it in full truck loads. The charge for river service is 5 cents per 100 pounds for ordinary lots and 3 cents per 100 pounds in consignments of 20,000 pounds and upward. The experiment is looked upon with great interest by Chicago shippers, as, if successful, it will greatly facilitate the transfer of freight to and from the roads accessible to the lighterage line.

The Hamilton Cataract Power, Light & Traction Company has recently started the two 5000-kw. Westinghouse generators in its De Cew Falls power station in Ontario, Canada. Power is supplied from Welland Canal feeders tapped in about 14 miles above the power station, and at the station the water has a head of 267 feet. The Westinghouse generators are of the two-bearing type, direct connected to Escher-Wyss water wheels. The power is transmitted by two separate three-phase transmission lines to the city of Hamilton, 35 miles distant, where it is used for lighting, street railway and manufacturing purposes. A reserve steam driven station is located at Hamilton, which contains two 1000-kw. Westinghouse generators. The entire station and high tension apparatus are of Westinghouse design.

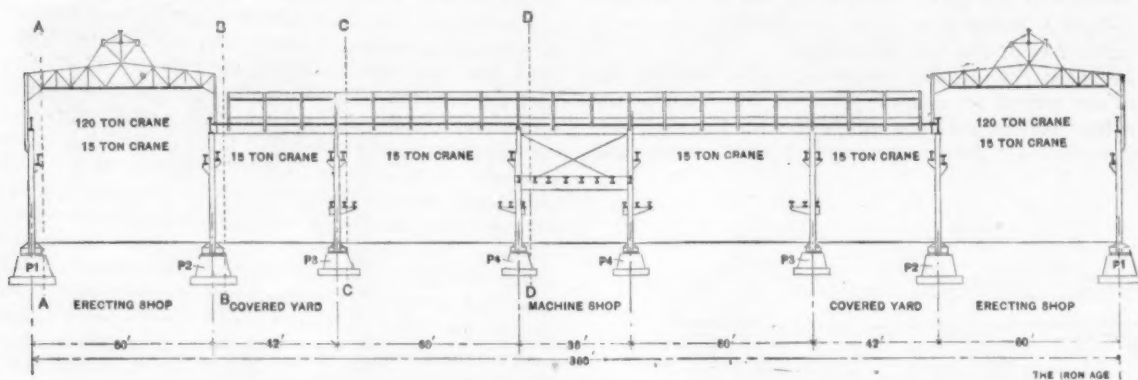
# The New Lehigh Valley Shops.

## The Locomotive Repair Shops at Sayre, Pa.

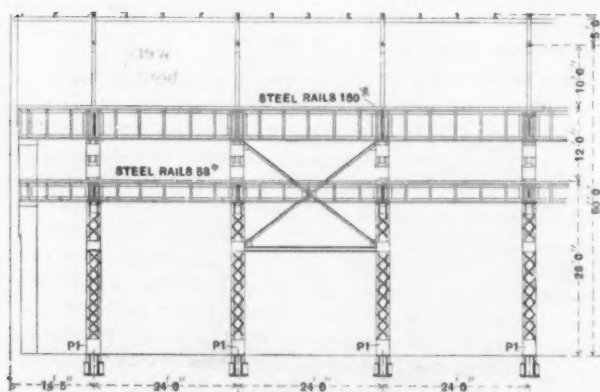
The ground covered by the four buildings comprising the Lehigh Valley Railroad Company's new shops at Sayre, Pa., amounts to about 379,000 square feet, or nearly 8½ acres. The main locomotive shop alone covers over 274,000 square feet, or 6.1-3 acres. The blacksmith shop and store house are each 103 x 363 feet and the power house is 125 x 240 feet. The steel work was designed and the steel construction checked and approved by D. C. Newman Collins, consulting engineer, 29 Broadway, New York, under the direct supervision and general approval of Walter G. Berg, chief engineer, and

size that only a part plan and sections are given. They will serve, however, to show the general features of the design. The remainder of the building is a continuation of that shown, with probably a few modifications that will not prove of any special interest.

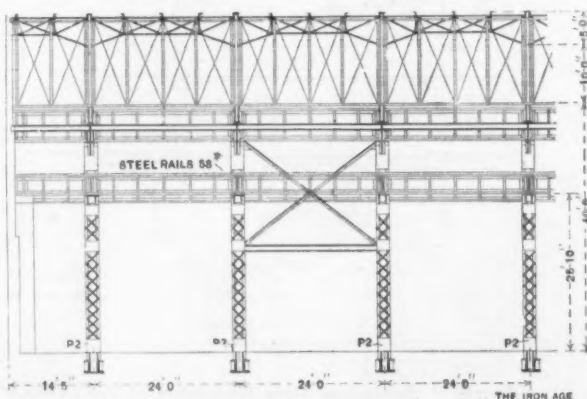
The two outside bays have a clear height of 50 feet to the bottom chord of the trusses and are used for general erecting purposes and for boiler work. The entire central portion of the building between the erecting shop bays has a clear and uniform height of 34 feet 4 inches to the under side of the roof girders, which carry a regular system of skylights of the saw-tooth type, having the



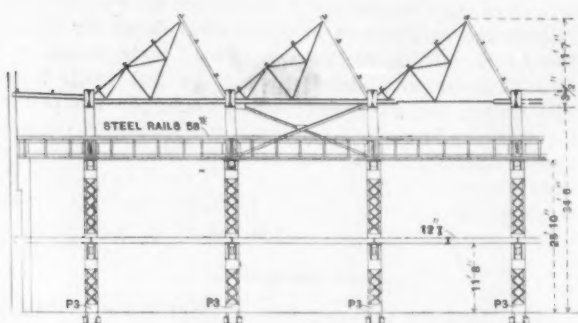
Transverse Section of Main Locomotive Shop.



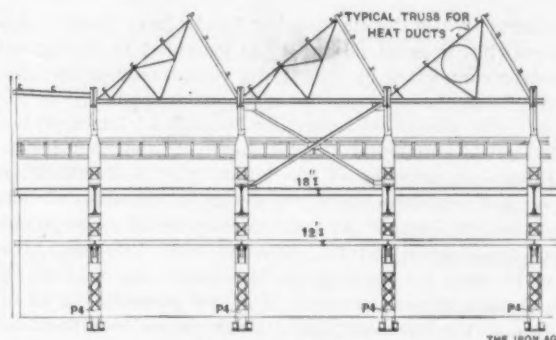
Longitudinal Section on Line A.



Longitudinal Section on Line B.



Longitudinal Section on Line C.



Longitudinal Section on Line D.

E. D. B. Brown, architect of the Lehigh Valley Railroad Company. The details of the shop and field inspection of material were in charge of F. E. Schall, bridge engineer of the company. It is the intention to limit this article to the established data that governed the design and detailing of the steel work, and the general description and uses of the structure will consequently include only such information as will tend to rule and regulate the development of this part of the work.

## The Main Locomotive Shop.

The diagrams here presented show the symmetrical and uniform layout of the work. The building is of such

glass inclined toward the north at an angle of 60 degrees from a horizontal line. The gallery in the center bay has its elevation fixed at 21 feet 6 inches above the main floor, and is intended for the convenient disposal of the heat units, lavatories, lockers and for light storage. This leaves the three center bays with a clear floor for machine shop purposes.

The length of this building is 749 feet, divided into 30 bays, or panels, of 24 feet each, and having one half panel at each end of the building, which can be removed when future extensions are decided upon, all details and sizes being designed with this in view. The brick walls



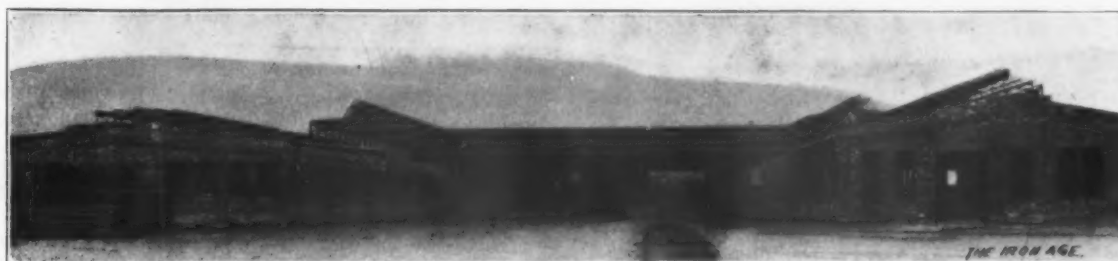
surrounding the steel frame rest on their own foundations and are independent of the steel frame, except by being anchored to the heavier parts of the posts designated in the illustrations as P 1, and being built in between the flanges of the upper section of these posts. The gabled walls all run above the finished roof to afford protection against fire and to present a better finish architecturally. All roofs are covered with reinforced cinder concrete, built to provide for expansion and covered with tarred felt roofing and granulated slag.

The two erecting shop bays have a monitor running the full length of the building, with pivoted sash on the sides inclined at an angle of 60 degrees from a horizontal line. The vertical sides of the erecting shop above the

a wheel base of 10 feet and an assumed maximum load of 35,000 pounds on each wheel. The 15-ton cranes in each of the 42-foot bays are like the other 15-ton cranes, except the wheel loads, which were assumed at 30,000 pounds. All rails for the 15-ton cranes are of a weight of 58 pounds per lineal yard.

#### The Steel Design.

The building was treated in design as a series of craneways capable of withstanding all lateral pressures and forces and depending on the lighter roof construction merely as a covering. The main posts were carried below the floor just far enough to bury all obstructions to a clear passageway around them. All posts marked P 1



Store House.

Main Locomotive Shop.

Blacksmith Shop.

saw-tooth portion are covered with pivoted and fixed sash surrounded by reinforced cinder concrete slabs on steel siding. The gallery floor is of reinforced cinder concrete also. The riveting tower in the boiler shop section obtains the necessary clear height by adopting a pit riveter, avoiding the necessity for running up the building into an unsightly tower, as is generally done.

The main posts are left open for convenient inspection and painting from time to time, except near the floor, where they are boxed in with steel plates. These boxes are filled with concrete, having the top sloped off to such a pitch as to prevent the possibility of an accumulation of dirt, waste or other inflammable material.

In the south end of one of the erecting shop bays the regular roof trusses were omitted and heavy box girders

and P 2 in the illustrations were anchored to the concrete piers with four bolts  $2\frac{1}{2}$  inches in diameter and posts P 3 and P 4 to their respective piers with four bolts  $2\frac{1}{4}$  inches in diameter to each post. This anchorage, together with the sway bracing over the gallery and with the aid of the dead weight of the building itself, is sufficient to withstand the most severe combinations of lateral forces without depending on the brick work for assistance.

The anchor bolts for all main posts were set in circular metal boxes 12 inches long and about 4 inches in diameter to permit a possibility of adjustment of the tops of the anchor bolts after the concrete mass hardens. The posts were leveled up on steel wedges and thoroughly grouted to a solid bearing, while  $2\frac{1}{2}$ -inch holes were



Framing of the Main Locomotive Shop.

of exactly the same profile were substituted, which were designed to carry, in addition to the regular roof load, a special riveting tower crane of 20 tons capacity on a runway provided for it on the side of each girder. This crane has two two-wheel trucks with a maximum load of 32,000 pounds on each wheel and a wheel base of 6 feet.

The upper craneway in the two erecting shop bays is designed to carry an electric crane of 120 tons capacity for lifting a locomotive bodily over others and lowering it over a pit selected for its repairs. These cranes have two four-wheel trucks with wheels spaced 4 feet centers, making a total wheel base of 12 feet and a maximum load of 87,000 pounds on each wheel. The crane rails here used weigh 150 pounds per lineal yard.

The lower cranes in the erecting shop bays, as well as the two 60-foot span cranes in the machine shop, are of 15 tons capacity, having two two-wheel trucks with

punched in all base plates of the posts to facilitate the flow of cement grout, and the anchor bolts by this means were firmly secured in position.

Expansion of material due to temperature changes was arranged for laterally by designing the top section of all P 3 posts in two parts, practically a split post, connected by gussets and slotted holes, which allow 2 inches of space for temperature changes in a distance of 78 feet (from P 3 to the center of the building) and 102 feet (from P 3 to the outside of the building). All lateral field connections were riveted except the slotted holes in the top of P 3 posts.

Longitudinal stiffness and expansion of material were provided for by a series of braced tower bents every third panel, leaving two unbraced panels between each. At each point between these two unbraced panels all heavy members were specially designed with expansion

joints to allow space for 1 inch at each; these were 72 feet apart. The longitudinal roof members were generally bolted together at the building to avoid the expensive, tedious and unnecessary work of inconvenient riveting, except in the braced panels, where everything was riveted to make the bracing effective. The space allowed for expansion in this light material was assumed as being provided by the accumulated clearances in the many bolted connections.

The girders under the saw-tooth trusses, it may be noted, are not made of an economical depth, because the additional cost of this shallow limit was warranted by the desirability of getting the skylights as low as possible, both for their own efficiency and for that of the



Posts P 2 in Main Locomotive Shop.

erecting shop windows beside them. Special saw-tooth trusses were placed in five of the panels that came opposite the heat units, which were made to allow space for the passage of the large heat pipes. The saw-tooth trusses were 12 feet apart.

#### Line Shafts and Motor Brackets.

The original layout provided for continuous line shafts located under the crane girders at P 3 posts and also under the center gallery girders, three in all. These line shafts, each to be driven by seven motors, are so arranged that one motor can drive them and others be coupled in as needed. These crane girders at P 3 posts are studied particularly as regards lateral and vertical deflection and are arranged to carry the hangers for the support of the main shafts, to be secured to wood ties clamped to the bottom flanges of the two girders. The motors are located on steel brackets on the posts about 12 feet above the floor and assumed as weighing 7000 pounds each. Brackets for the jack shafts are placed on all P 3 and P 4 posts under or near the main shafts, and three longitudinal 12-inch beams are provided on each row of them for the convenient fastening of wood ties to carry the jack shaft hangers. These jack shafts are driven by belt from the main shafts, and will admit of changes *ad libitum* in belting to any number of small machines. For convenient adjustment these brackets were all made in duplicate, so that the motor brackets can be located or changed wherever occasion directs.

The erecting shop roof is framed with light angle trussed purlins running longitudinally, and each is well braced from the bottom chord of the roof trusses to prevent vibration. They carry 7-inch channel rafters, 6-foot centers, on which the concrete is laid. At the outside eave a 9-inch channel is located, both to afford a permanent longitudinal tie and also to provide temporary support for the rafters. The saw-tooth trusses connecting to P 3 and P 4 posts are made with a bottom chord composed of two 6-inch channels to afford additional tie and bracing to these posts. Four loading platforms, or puplits, are located along the gallery floor, in size 6 x 8 feet, and are designed to carry a live load of 200 pounds per square foot. Framing for the eight flights of circular stairs was provided in the gallery floor framing; also all necessary steel ladders to afford access to the crane cages, to the roof and for cleaning skylights. No metal was used in the design of less thickness than  $\frac{1}{4}$  inch.

The crane girders were proportioned with liberal width of top chord and were reinforced to better with-

stand the tendency to lateral deflection due to the action of moving loads. They were carefully arranged to be free from connected bracing, so that they are at liberty to deflect vertically with the minimum amount of vibration to the structure. All stiffeners are straight angles on fillers and bear at top and bottom to afford the best support for the wheel loads. These girders are all riveted in solid in all braced bays and have riveted connections even at the expansion points.

#### The Blacksmith Shop.

This building is arranged with the roof trusses in one span of 100 feet, and the trusses are anchored at each end to stone blocks built into the walls. The clear height to the bottom chord of the trusses is 20 feet. No provision for expansion was made in a lateral direction, as it was considered safer to require a wall 20 feet high to accept this duty rather than to expect it to withstand the pushing and pulling of a loose roller bearing that might gradually creep off its support and cause disaster.

No material was used of less thickness than 5-16 inch on account of corrosion, and the bottom chords of the trusses were made stiff and heavy to provide support for the probable concentrations likely to be hung upon them. A monitor, with sash, skylights and louvres, runs full length of the building, and also provides ventilation at the extreme peak by means of an additional small monitor with open louvres. An I-beam trolleyway is located through the building, to be equipped with a triplex block and trolley.

No provision is made in the roof framing for the lateral support of the future jib cranes, as their exact loca-



Posts P 3 in Main Locomotive Shop.

tion was difficult to determine. Iron blocks were therefore set into the walls under each roof truss bearing, which is detailed to provide connections for any future system of rod bracing that may be needed.

The gross roof load was assumed at 80 pounds per square foot. Three panels of rod bracing are introduced in the roof framing to stiffen things generally, and all holes necessary for fastening wood, brass and other material were punched in the steel at the shops before erection.

#### The Storehouse.

This building is divided into two parts of equal size by a transverse fire wall. The north half is equipped

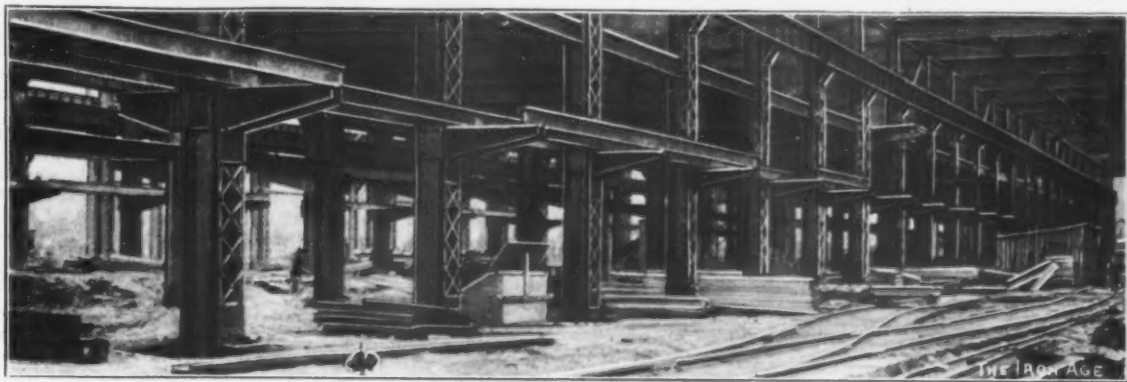


with transverse hand power cranes of 5 and 15 tons capacity. The roof trusses are designed to carry a gross load of 75 pounds per square foot, and the trusses are supported by two rows of posts running longitudinally as well as by the outside walls. A liberal monitor is provided through the center, with ample light.

The clear height of the building to the bottom chord of the trusses is 17 feet above the floor and 21 feet above the top of the pit rail. Lateral bracing is called for in the roof to counteract the effects of lateral pres-

the support of boilers and tunnels over the smoke flues, and also for the support of the coal pockets, which have posts located over the flues or tunnels.

Two steel coal pockets are built in the boiler house, with a capacity of 260 tons each. They have hopper bottoms and are plate lined. The ash bins and coal conveying tower are of steel, with a reinforced cinder concrete roof covered with tarred felt and granulated slag. The sides are covered with corrugated galvanized iron. Each of the two ash bins has a capacity of 3000 cubic feet



Posts P 4 and Gallery in Main Locomotive Shop.

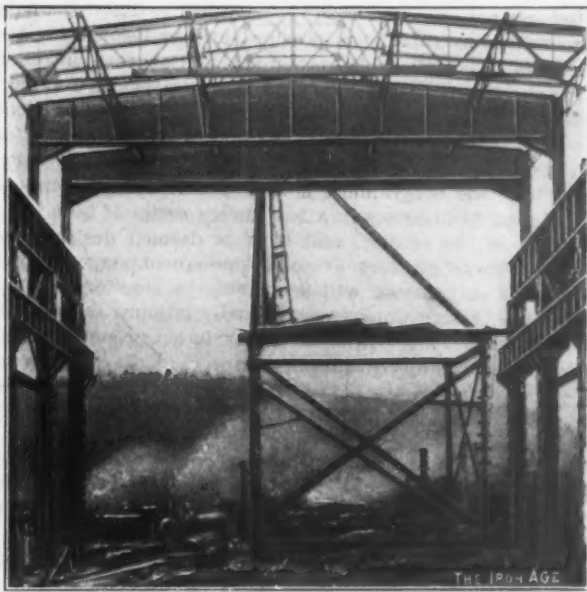
tures and the action of the cranes. Steel ladders were located on the plans to afford convenient access to the monitor and to the roof.

#### The Power House.

The roof trusses here rest upon and are anchored to the brick walls at the sides of the building as well as to the center longitudinal fire wall. They are designed to carry a gross load of 85 pounds per square foot in addition to 2000 pounds concentrated at any point on the bottom chord. The boiler house trusses have in addition

and is lined with reinforced cinder concrete. This tower also includes supports and facilities for fastening all coal conveyors, ash hoists, and for the convenient loading, unloading and crushing of coal.

The roof of each building in this group has the same covering of reinforced cinder concrete covered with tarred felt and granulated slag. All holes were carefully incorporated in the original design for the fastening of the work of other trades, so that they could be punched at the shops rather than have to undergo the tedious and expensive process of drilling in the field. All stresses and sizes of material were carefully and fully shown on the plans side by side to facilitate the ready completion of the work; all governing sizes of members and of con-



Riveting Tower Girders in Main Locomotive Shop.

to this a load of 4000 pounds on the bottom chord at the center as the assumed weight of a coal conveyor.

A monitor, with sash on two sides and two separate rows of skylights, is introduced over the boiler house, and portions of the skylights are movable for the convenient removal of upright boiler tubes. The engine house has one row of skylights. One 20-ton crane with two two-wheel trucks is located here. The wheel base is 10 feet and the assumed load on each wheel 38,000 pounds.

The engine house floor is calculated to carry a live load of 400 pounds per square foot in addition to the weight of the floor material. Grillage is included for



View of Roof in Blacksmith Shop.

nections were thoroughly fixed at the start for the use of the various trades; all details of the shop work were promptly checked and approved to avoid delay. The work was then quickly, accurately and satisfactorily executed in the shops of the American Bridge Company.

At the monthly meeting of the Milwaukee branch of the American Society of Mechanical Engineers, held January 17, Prof. Warren S. Johnson and H. Theo. Hansen read papers, which were informally discussed by the members. The annual election of officers will be held in February.

The returns made to the Amalgamated Association of actual shipments of tin plate by the American Sheet & Tin Plate Company determine that wages of sheet and tin plate workers for the next 60 days ending February 28 will be as per base of the tin plate and sheet scale for 1904-05.

## New Boiler Regulations.

### Suggestions by American Boiler Manufacturers' Association.

WASHINGTON, D. C., January 24, 1905.—The Secretary of Commerce and Labor gave a series of hearings the past week to the boiler manufacturers and steamboat men of the country on the recent revision of the code of rules relating to boiler construction and steamboat inspection, which the Department desires shall be subjected to the most careful scrutiny before being approved and put into force. More than 100 prominent boiler and engine manufacturers, shipbuilders and steamboat owners were present, and the new code was canvassed in minute detail.

#### Chairman Meler's Views.

The views of the boiler manufacturers of the country were submitted by E. D. Meler, chairman of the Committee on Uniform Boiler Specifications of the American Boiler Manufacturers' Association, who laid before the Secretary a number of important suggestions for changes in the proposed code, all of which were of a decidedly practical character, and which related chiefly to the provisions of Rule I, the text of which was printed in these dispatches a fortnight ago. These suggestions are briefly, as follows:

Concerning the requirement of section 1 as to the stamping of iron or steel boiler plates, it appeared to be an unnecessary hardship to insist on putting the stamp on plates in at least five places. The old rule provided for only three stamps, one at each diagonal corner and one at or near the center of the plate, which was quite sufficient for all practical purposes. In the case of small plates, such as butt straps, there was hardly room to put on so many stamps, and as long as the rules provided that at least one stamp must be visible after the boiler is completed there would be no difficulty in preserving one of the three stamps intact for the inspector.

Concerning the requirement of section 6 with regard to the inspection of plates, the revised code provided that when the material had been tested at the mills by the assistant inspector his report, together with the boiler maker's affidavit, "may be accepted." Section 4430 of the Revised Statutes distinctly states that material so stamped "shall be accepted." This requirement on the part of the law was a most important safeguard for the boiler manufacturer or the vessel owner against arbitrary ruling by an inspector at the place where the boiler was built or repaired. The Board of Supervising Inspectors had no right to change a United States statute.

#### A Costly Requirement.

Section 7 requires four test pieces to be taken from the four corners of each plate respectively. As these test pieces have to be 2 inches wide, it virtually means that each plate must be rolled and cut 4 inches wider than necessary for purposes of construction. This rule is based on sections 4430 and 4431 of the statutes. A safe and conclusive test of this material could be made at the mills if coupons were cut from the four corners of the large plate as rolled, from which the smaller plates are cut. Such practice is perfectly satisfactory to the engineers and inspectors of the large railroads and also of the Navy Department.

Section 8 provides that plates made by the acid process may contain as much as 0.06 per cent. of phosphorus, while in those made by the basic process the phosphorus is limited to 0.04 per cent. The latter figure should apply to all plates. As high a percentage of phosphorus as 0.06 would be apt to make the metal cold short, no matter by what process made. As far back as 1889 the American Boiler Manufacturers' Association adopted 0.04 as the limit for phosphorus, and there has never been any difficulty in obtaining plates with phosphorus as low as that figure. The Pennsylvania Railroad Company, a very large user of boiler steel, fixes 0.04 as the limit. It would also be advisable to limit the sulphur content, since sulphur is known to make the plate red short.

In the same section a maximum limit for tensile strength is fixed at 75,000 pounds. This is far too high and is apt to give hard, brittle steel not suitable for boiler work. The American Boiler Manufacturers' Association in 1889 fixed 62,000 pounds as the upper limit, and in 1898 increased the upper limit to 70,000 pounds, but only for shell plates not exposed to the direct heat of the fire. For such as are in any way exposed to the direct heat the upper limit has been left at 65,000 pounds. The Pennsylvania Railroad Company also makes 65,000 pounds the upper limit. There has been much trouble on the Ohio River from steel of too high tensile strength. Under the new 8-inch testing section plate will show from 4000 to 5000 pounds less tensile strength on a test than under the old short section; therefore manufacturers have been tempted to reach the higher limit in the long section by putting in more carbon than is compatible with the ductility required in boiler steel.

#### Changes in Boiler Construction.

The terms of Section 4 in Rule II provide for riveting according to a rule given in the appendix of the new code. This

appendix is found in the General Rules of January, 1901, 1902 and 1903. It had been fully discussed by members of the Committee on Uniform Boiler Specifications and shown to be faulty in regard to present American boiler practice, being based on Traill's Rules, which were drawn up for iron plate and iron rivets. At present there are fully ten times as many steel boilers as iron boilers in service, and these rules should be entirely remodeled to suit steel plates and steel rivets, for which in their present form they give incorrect results.

Section 8 is liable to serious misunderstanding. Under its terms a donkey boiler is required to be installed on steam vessels of sufficient capacity to work the fire pumps and "other auxiliary machinery." In modern vessels many appliances not formerly known are in use, and in the case of ships having their own electric plants, for example, section 8 might be arbitrarily construed by an inspector to mean that a donkey boiler large enough to run such electric plant must be provided. The section might be amended by defining the auxiliary machinery intended to be operated by the donkey boiler.

Section 9 provides that screw stay bolts shall not be allowed in the construction of marine boilers in which salt water is used to generate steam unless such bolts are protected by sockets, but they may be used with or without sockets in the construction of marine boilers where fresh water is used, provided that the bolts are not of a greater length than 14 inches. The adoption of a 14-inch limit for screw stay bolts might work great hardship in special cases, and there seems to be no sufficient reason for such limitation.

Section 13, relating to steel tubes, which provides that "all such tubes made of Bessemer, acid or basic open hearth steel" shall be required to show certain physical characteristics, prescribes very careful tests of steel tubes while wrought iron tubes are exempt from all the prescribed tests. Iron tubes should be subjected to exactly the same tests as steel tubes.

In section 19 the provision for flanging copper pipe outward to a depth of not less than twice the thickness of the material in the pipe, while proper enough under ordinary conditions, ought to be modified for the special conditions found on our Western rivers, and a provision should be incorporated to that effect.

#### The New Regulations Not to Be Enforced at Once.

Owing to the great volume of the data submitted to the Department at the hearing, which occupied two full days, it is probable that the new regulations will not be approved and promulgated for at least a month. The statements laid before the Secretary have been referred to the Board of Supervising Inspectors, which has just been convened in this city for its regular annual meeting. It was the original intention of the Department to digest the data submitted as rapidly as possible, and to incorporate the results in a bill to be presented to Congress outlining the changes in existing statutes that are regarded as necessary to legalize a number of desirable modifications which cannot now be made without violating the letter of the law. So much delay would be involved in carrying out this programme, however, that the Department will send to Congress in a few days a series of bills bearing upon the subject, and if it is deemed desirable to amend these measures at some subsequent stage of proceedings such action will be taken. In view of the fact that the present Congress will finally adjourn within less than six weeks, it will be necessary to act promptly in order to secure any legislation whatever. W. L. C.

**The Old and the New Japan.**—John H. Pierce, the retiring president of the Illinois Manufacturers' Association, at the recent annual meeting told of having seen in Japanese cities not far from each other types of the old and the new method of manufacture that strikingly illustrated the progress being made by the Yankees of the East. In a primitive foundry, where the iron was melted in what in this country was once known as a smithing kettle, the air was furnished by means of a bellows operated by two moving platforms. On each platform stood 16 men. At a signal the men on one platform would jump into the air and seize ropes, while the other platform with its human load went downward with a thud. Then the other 16 would jump for their ropes and the first crowd would drop on its platform. In this way the bellows were actuated by 32 low paid men. Not far from here he visited another plant where the most modern American, German and English machinery was installed, and was introduced to heads of departments, bright young Japanese men who had been graduated, most of them, from American technical schools. He said that the latter plant compared favorably with anything he had seen in any part of the world.



## Recent Customs Matters.

A case of much importance to the manufacturers of the finer grades of steel and which has been bitterly fought before the lower tribunals will be argued within a week or two before the United States Circuit Court of Appeals. The title of the case is "the United States against the Roessler & Hasslacher Chemical Company," and the question at issue is the duty to be paid on ferrochrome, ferrotungsten, ferromolybdenum and ferrovanadium. They have been assessed as metals unwrought at 20 per cent., and the importers claim that they are dutiable by similitude to ferromanganese, which is used for a similar purpose and is specifically provided for in the tariff law at \$4 a ton. The case has already been decided in favor of the importers by the Board of United States General Appraisers and the United States Circuit Court. The domestic producers of these metals have retained counsel to assist the Government. The importers rely on the fact that the ferros are never of themselves made into anything useful and therefore cannot be classed as metals unwrought, as they are never wrought, but are used as hardeners in the production of steel for special purposes. Ferromanganese is used for similar purposes, and on this similarity in use the importers rely.

A determined effort to expedite the trial of customs cases in the United States Circuit Court and the Court of Appeals is now being made by officials of the Treasury Department, the Department of Justice, the Judges of the courts and the United States General Appraisers. Most of the blame for the delay in the trial of these cases is laid by the Government officials at the door of the importers and their attorneys. It is alleged that it often takes two or three years to reach cases that could be decided in as many months, and that the cause of this delay is that the importers and their attorneys do not wish to have the cases quickly disposed of. The reason for this attitude lies in the methods in vogue among the importers and their lawyers. When an importer is dissatisfied with the rate assessed by the collector he takes an appeal to the Board of United States General Appraisers. There the case is quickly heard and decided, but if the issue is of any importance an appeal is taken to the Circuit Court and then to the Court of Appeals. In the meantime the high rate of duty is assessed on every importation of similar goods, and the importer, while formally protesting each invoice, goes on selling his goods on the basis of the high rate of duty, so that the public is really paying the tax. At the end of two or three years the case is finally decided in the importer's favor and he receives a refund of the excess duty paid on all his importations during that time. Of this as a rule his lawyer gets half and he gets the rest, which is clear profit, as the consumer has already reimbursed him for the extra duty paid. It is natural, then, that when an importer has what he considers a good case he is not anxious to have it tried too quickly. The longer he waits the more protests will pile up and the greater will be the refunds. So generally recognized is the policy of delay that cases have occurred in which importers asked members of the Board of General Appraisers to delay the decision of cases in order that the refunds might be greater, and one of the leading customs lawyers recently told of one of his clients who figured regularly on his refunds to pay the expenses of his business.

In a decision handed down January 20 the Board of United States General Appraisers overrules a protest by Justin Dutrey, New Orleans, against the assessment of duty at 45 per cent and one cent a pound on an importation of merchandise invoiced as steel bands tempered and blued, but which the appraiser returned as sheet steel in strips 25-1000 inch thick or thinner, valued at more than 4 cents a pound. They are used in the manufacture of butchers' saws. The importer claimed that they were dutiable as sheets of steel polished at 2 cents a pound.

On the same day the board overruled a protest by F. B. Vandegrift & Co., New York, against the classification as manufactures of metal at 45 per cent. of an importa-

tion of parts of plows. The importers claimed that they were dutiable as plows at 20 per cent.

## A New Method of Splicing Belts.

A novel and effective way of splicing belts has been invented by Wm. Kirkwood of Chicago. As shown in the illustration, it will be seen that the belt is slit into any number of sections, each section being about twice as wide as the thickness of the material. The sections are then turned on edge and mortised together, and are pierced and riveted together after the manner indicated. The rivet is a rod or a piece of tubing, which is split at the ends and turned back so as to hold the splices firmly in position. Tubing is preferred for the reason that it is more easily split and bent back than would be a rod or bolt. The merit in the arrangement lies chiefly in the



The Kirkwood Belt Splice.

fact that there is nothing subtracted from the total section of the belt. In other words, the full strength of the material is retained and the splice is of such a character that it presents a small amount of resistance to the flexure of the belt around the pulley.

**The Smythe Open Hearth Furnace at Worth Brothers' Works.**—From recent reports received from the No. 2 open hearth steel plant of Worth Brothers Company, Coatesville, Pa., designed and built by the S. R. Smythe Company, Pittsburgh, Pa., it is apparent that the results and tonnage derived therefrom are considerably more than up to the average in such plants when all matters are taken into consideration. This plant consists of four 50-ton furnaces. One of these furnaces, No. 11, has recently made 253 consecutive heats, producing 12,530 gross tons of steel ingots, operating with producer gas made from coal, without the gas being taken off the furnace for a single repair, except for the burning out of producer gas mains for two hours every Saturday. This is an exceptionally good run, considering that producer gas was used as fuel and not natural gas or oil, and that, furthermore, the quality of the steel produced was of the highest grade, all having been rolled into fire box and flange plates for marine and locomotive boilers and direct from the ingot with one reheating. Credit is not only due to the designers and builders of these furnaces, but also to J. L. Gallup, the superintendent of the steel plant. The operation of a plant of this character is not the same as that of a number of other large plants, for the reason that the steel has to be of the finest grade, every plate made therefrom being subject to chemical and physical tests as well as inspection.

### Trade Organizations in France.

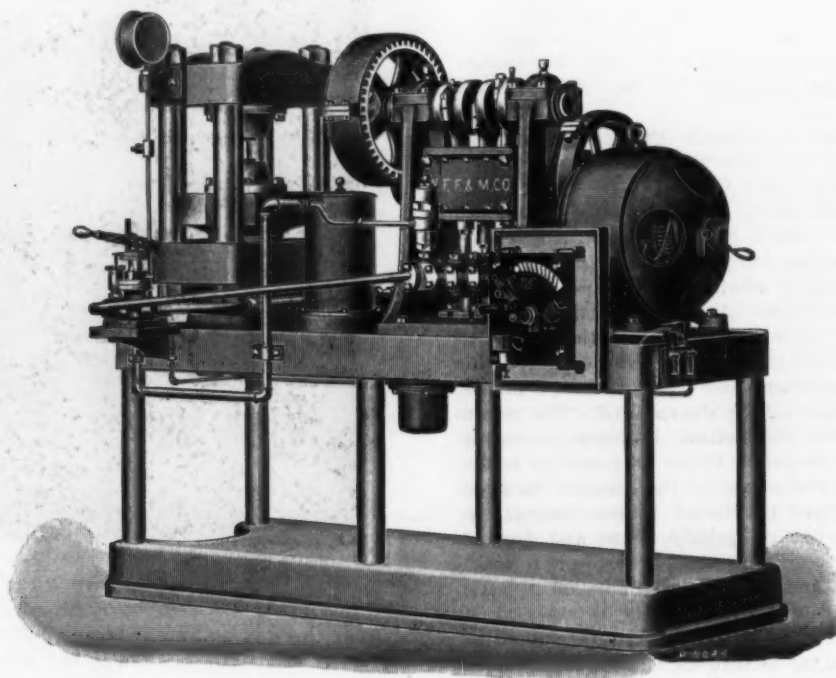
With its scrupulous care over the interests of its people the French Government takes cognizance of all kinds of trade organizations. The French, however, give such organizations the name of "professional syndicate." These syndicates in France are traced back to the guilds formed in the middle ages and have been governed by various laws passed from time to time. In a bulletin recently issued by the American Chamber of Commerce of Paris the secretary, Charles H. Becker, gives an interesting account of these organizations.

The law applies to all syndicates alike, whether they be masters' associations or labor unions. While these syndicates or associations may be freely established without the authorization of the Government, it is necessary that they file copies of their statutes or by-laws and the names of those who under any title whatsoever are charged with the management, which papers must be filed at the town hall of the locality wherein the organization is established. Copies of these statutes or by-laws

declarations regarding the statutes or by-laws or the names and titles of managers and directors the fine may be increased to 500 francs. On January 1, 1903, the total number of such syndicates existing in France was placed at 9280, of which 2757 were composed of employers, 3934 of employees, 156 of both employers and employees and 2433 were agricultural syndicates. On the same date the number of unions of syndicates was 273. The total membership of the syndicates at that time was placed at 1,481,485 persons.

### The Waterbury Farrel Sixty-Ton Hydraulic Press.

The self contained motor driven 60-ton hydraulic press shown in the accompanying engraving was built by the Waterbury Farrel Foundry & Machine Company, Waterbury, Conn., for the Assay Department of the United States Mint at Philadelphia. Its purpose is the compressing of bullion buttons, but it may be used for any



A Motor Driven 60-Ton Hydraulic Press Built by the Waterbury Farrel Foundry & Machine Company.

are transmitted to the attorney-general. Those who are charged with the management of any syndicate must be French citizens in full possession of their civil rights.

When such syndicates are regularly constituted in accordance with the stipulations of the present law they may freely co-operate or combine for the study and advancement of their economical, industrial, commercial and agricultural interests. When they thus combine into a union such a union must make known the names of the syndicates of which it is composed, but this union shall not own real estate, neither can it sue or be sued. Any syndicate, however, whether composed of employers or employees, has the right to sue and be sued. It is stipulated that syndicates shall not acquire buildings other than necessary for their meetings, for their libraries and for their schools of professional instruction. While they may establish among their members special funds for mutual aid and pensions they cannot acquire property, even by donation. In the case of an acquisition for a consideration the property shall be sold and the price thereof deposited in the treasury of the association, while in the case of a donation the property must be returned to the donors or to their heirs or assigns.

If the provisions of the present law should be violated proceedings shall be taken against the managers or directors of the syndicate, and they can be punished by a fine varying from 16 to 200 francs, while in case of false

other work which requires not more than 60 tons pressure.

The upper platen is stationary, the pressure being applied from beneath. The movement of the ram is controlled by a patent by-pass valve, which allows the operator to stop the ram at any point by hand or automatically when a predetermined pressure is reached. The diameter of the ram is 8 inches, the maximum stroke 2 inches and the speed 10 inches per minute. The hydraulic pressure is furnished by a geared triplex pump, each of the three plungers of which is 13-16 inches in diameter and has a stroke of 3 inches. It is geared directly to the motor, rawhide pinions being used throughout, and runs at about 60 revolutions per minute. The working pressure is 2400 pounds per square inch, and the capacity of the pump is 565 cubic inches per minute.

The piping, tank and ram are brass, and the press cylinder is copper lined. All packing not metallic is leather, to allow the use of oil in the hydraulic system. A pressure gauge and safety valve are provided. The dies which are used are hardened flat disks, for flattening test pieces. In the illustration the machine is shown equipped with a Crocker-Wheeler 5 horse-power, 220-volt motor. The wiring, motor starter and cutting out switch are included in the equipment. The complete machine occupies a floor space of 52 x 81 inches, and weighs, including motor, 6710 pounds.



### The Wells Pipe Threading Machine.

A machine for threading 1-inch and 2-inch pipe by hand is shown in the accompanying illustration, being a new product of the F. E. Wells & Son Company, 23 Riddell street, Greenfield, Mass. The machine is simple and compact, weighing but 45 pounds, and is operated much after the manner of the ordinary hand die stock, except that gears are used to multiply the power, so that one man can easily thread pipe which would require two men with the ordinary hand stock.

The die is held in the large gear, which has a threaded shank that screws into the main frame and acts as a lead screw to start the dies. The pipe is centered by means of bushings, as in the ordinary die stock, and is held from turning by two vise jaws on the back of the machine, which are adjusted by set screws. The gears are all machine cut, and all castings are of malleable iron, to save weight and afford ample strength for severe use. The machine can be bolted to a bench or post, and the vise can be used in place of an ordinary pipe vise. The Economy dies made by the same company are furnished with the machine, although any standard solid square pipe die may be used instead.

In operating the machine the company's regular No. 1

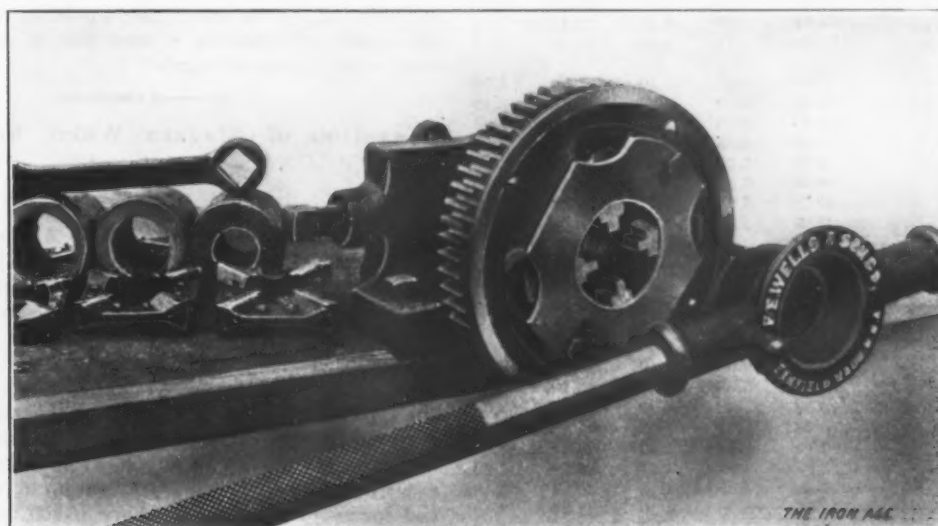
stockholders the following comprehensive plan to meet the present and future requirements of the company—viz.:

It is proposed to create an issue of the thirty year 5 per cent. first consolidated mortgage bonds of the company in the total authorized amount of.....\$30,000,000. These bonds shall be disposed of as follows:

(a) To be reserved for issue only upon the payment or redemption of the present first mortgage bonds, it being agreed that no further bonds shall be issued under the first mortgage, and that the \$5,000,000 unissued bonds be canceled .....	\$15,000,000
(b) To be available to secure five-year notes to be issued to an amount not exceeding \$10,000,000.....	12,500,000
(c) To be issued only in payment for property hereafter to be acquired, or for other proper corporate purposes as the Board of Directors may direct.....	2,500,000
	<hr/> \$30,000,000

Total.....\$30,000,000

The first consolidated mortgage bonds are to be secured by a mortgage which the Board of Directors in-



The Wells Pipe Threading Machine.

stock is fastened to a small pinion to provide the necessary handles. For threading smaller sizes of pipe than 1-inch the hand stock may be taken off and used directly, the pipe being held in the vise jaws. The moderate weight and inexpensive construction make it possible to sell the machine at a low price.

### The Lackawanna Steel Company.

A special meeting of the stockholders of the Lackawanna Steel Company has been called for February 7 at West Seneca, N. Y., to pass upon a series of propositions which are explained in the following circular issued by E. A. S. Clarke, the president:

When arrangements were made some two years ago for the funds necessary for the completion of the company's new plant near Buffalo, N. Y., provision was made for the future needs of the company by reserving \$5,000,000 of its stock and \$5,000,000 of its first-mortgage bonds out of the total issue of \$20,000,000 of bonds and \$40,000,000 of stock then authorized.

The company is now in need of about \$10,000,000 with which to pay for the completion of its plant, certain new construction and additional property not contemplated when the mortgage to the Farmers' Loan & Trust Company was executed, and additional capital found necessary in the development of its business.

It is, however, deemed not expedient to issue the stock and bonds reserved as above stated, and your directors have therefore prepared for submission to the

tends shall cover only the property of the company now covered by its mortgage to the Farmers' Loan & Trust Company, dated April 1, 1903, subject to the lien thereof; the stock of the Negaunee mine now owned by the company and all other property acquired by the issue of any of the said bonds (whether covered by the prior lien of the first mortgage or otherwise), although for practical reasons power is asked to mortgage such of the company's property as the directors may deem expedient.

For the present needs of the company it is further proposed to issue five-year 5 per cent. gold notes of the company to an amount not exceeding \$10,000,000, face value, redeemable at the company's option on any interest day, upon 60 days' previous notice, and to secure the payment thereof by the pledge of first consolidated mortgage bonds to the amount of 25 per cent. in excess of the face value of all notes so issued, which notes are to be sold at a price approved by the Board of Directors or Executive Committee.

The H. C. Frick Coke Company, Pittsburgh, has announced some changes among officials in the Connellsville region, as follows: James A. Cowan, division superintendent of the Morewood District, and Clay F. Lynch, superintendent of Tarrs & Calumet, were appointed assistant general superintendents to General Superintendent W. H. Klingerman. Patrick Mullen, superintendent of the Buffington plant in the lower Connellsville region, has been made general mine inspector for the H. C. Frick Company and the United States Steel Corporation.

## Metal Fluctuations from 1893 to 1905.

We present in the form of a colored chart the fluctuations in the prices of copper, lead, tin, spelter and tin plate for the years 1893 to 1905. In order to include all these metals in one diagram separate series of figures had to be adopted, which are clearly indicated in the margin. It was not intended to show nor does there exist any close relation between the prices of the different metals. Even in the case of tin and tin plate there are so many other factors affecting the price of the latter that the fluctuations in the price of the former have only a general influence upon tin plate.

In recent years the monthly average prices of the metals which form the basis of the diagram were the following:

1902.					
Months.	Copper.	Spelter.	Lead.	Tin.	Tin plate.
January	11.45	4.28	4.02	23.37	4.19
February	12.47	4.17	4.10	24.73	4.19
March	12.12	4.29	4.10	26.15	4.19
April	11.97	4.41	4.10	27.29	4.19
May	12.10	4.49	4.10	29.25	4.19
June	12.22	4.87	4.10	29.29	4.19
July	11.94	5.22	4.10	28.28	4.19
August	11.59	5.45	4.10	28.14	4.19
September	11.60	5.45	4.10	26.55	4.19
October	11.71	5.48	4.10	25.75	4.19
November	11.44	5.29	4.10	25.42	3.79
December	11.61	4.91	4.10	25.32	3.79
1903.					
January	12.13	4.82	4.10	27.76	3.79
February	12.80	5.00	4.10	29.14	3.79
March	14.31	5.36	4.44	30.06	3.99
April	14.85	5.65	4.59	29.69	3.99
May	14.75	5.75	4.37	29.36	3.99
June	14.56	6.00	4.25	28.30	3.99
July	13.73	5.95	4.12	27.60	3.99
August	13.35	5.94	4.12	28.00	3.99
September	13.58	6.00	4.26	27.06	3.99
October	13.42	6.05	4.40	25.83	3.99
November	13.25	5.68	4.25	25.35	3.84
December	12.30	5.15	4.19	27.53	3.79
1904.					
January	12.62	4.95	4.39	28.75	3.75
February	12.34	4.95	4.40	27.98	3.64
March	12.60	5.05	4.50	26.19	3.64
April	13.19	5.22	4.50	27.99	3.64
May	13.28	5.14	4.48	27.76	3.64
June	12.74	4.79	4.22	26.14	3.64
July	12.62	4.85	4.17	26.28	3.60
August	12.50	4.85	4.15	26.74	3.49
September	12.67	5.06	4.20	27.27	3.49
October	13.09	5.17	4.20	28.53	3.49
November	14.21%	5.49	4.51	29.00	3.56
December	14.87	5.80	4.60	29.27	3.66

Among the instructive and interesting features of the diagram is the line of copper during 1900 and 1901, when the metal was held by main force in the vicinity of 17 cents, followed by the sudden drop at the end of 1901, when the load became too heavy for the manipulators. The upward tendency all along the line during the second half of 1904 is clearly reflected. The lowest price for copper was reached in the midsummer of 1894. Tin found its lowest level in the early fall of 1896, lead at about the same time, spelter early in 1895 and tin plate late in 1898.

## The World's Shipbuilding in 1904.

The *Herald*, Glasgow, Scotland, showed great enterprise in publishing, January 2, very full details of the work done in 1904 in shipyards all over the world. From it is taken the following table, into which is condensed the shipbuilding work of the year for the whole world, and which shows a reduction of 109 vessels, of 225,966 tons, and an increase of 15,554 indicated horse-power, as compared with 1903:

	1904.			1903.		
	Vessels.	Tons.	I. H.-P.	Vessels.	Tons.	I. H.-P.
Scotland	399	448,235	462,140	362	484,853	497,396
England	700	849,651	819,482	871	764,105	725,471
Ireland	25	78,244	57,350	25	158,482	128,450
Total U. K.	1,124	1,376,130	1,338,972	1,258	1,407,440	1,351,317
Colonial	84	25,086	11,066	96	37,225	12,966
Foreign	1,124	1,050,788	1,016,361	1,087	1,233,300	986,562
G'd totals.	2,332	2,451,999	2,366,399	2,441	2,677,965	2,350,845

The reduction in the tonnage launched in the United States brings that country below the level of the Clyde,

which has done more work in the year than any other shipbuilding district in Britain or in any country outside of the United Kingdom. Last year the order of the first half dozen districts was somewhat different from what it is this year. The United States was first, the Clyde second, the Tyne third, Germany fourth, the Wear fifth and the Tees and Hartlepool sixth. The following is the order this year:

	Vessels.	Tons.	I. H.-P.
The Clyde	329	417,870	432,815
United States	154	324,175	334,035
Germany	282	271,942	181,927
The Tyne	134	258,229	307,860
The Wear	73	228,932	154,185
Tees and Hartlepool	70	210,470	115,720

In commenting on the condition of the American shipbuilding industry the *Herald* says: "Not one order for an ocean going steamer, either Atlantic or Pacific, has been placed in United States yards since June, 1901, and for the first time in American history the building of ocean steamers has entirely ceased. This is hardly surprising when prices are remembered. The Newport News Company recently tendered for a merchant steamer for American owners. Its tender was \$260,000, but the owners got a tender of \$125,000 from a British firm for the same ship. The lake shipbuilders are getting £8 15s. per ton dead weight for the large steamers they are at present building, a price which they would not have the slightest chance of obtaining if they had to compete for the work with European yards."

## Taxation of Niagara Water Power Contemplated.

A new feature has been introduced in connection with the Niagara power development by Assemblyman Wade of Jamestown, who has presented a bill in the lower house of the New York Legislature for the taxation of corporations using the water of the Niagara River for power purposes. Mr. Wade is chairman of the Committee on Taxation and Retrenchment. His bill provides that each corporation using the water for power purposes shall pay, up to and including in the aggregate 20,000 horse-power, \$1.50 a horse-power; for every horse-power above 20,000 and up to 30,000, \$1 per horse-power; for every horse-power above 30,000 and up to 40,000, 75 cents, and for every horse-power above 40,000, 50 cents.

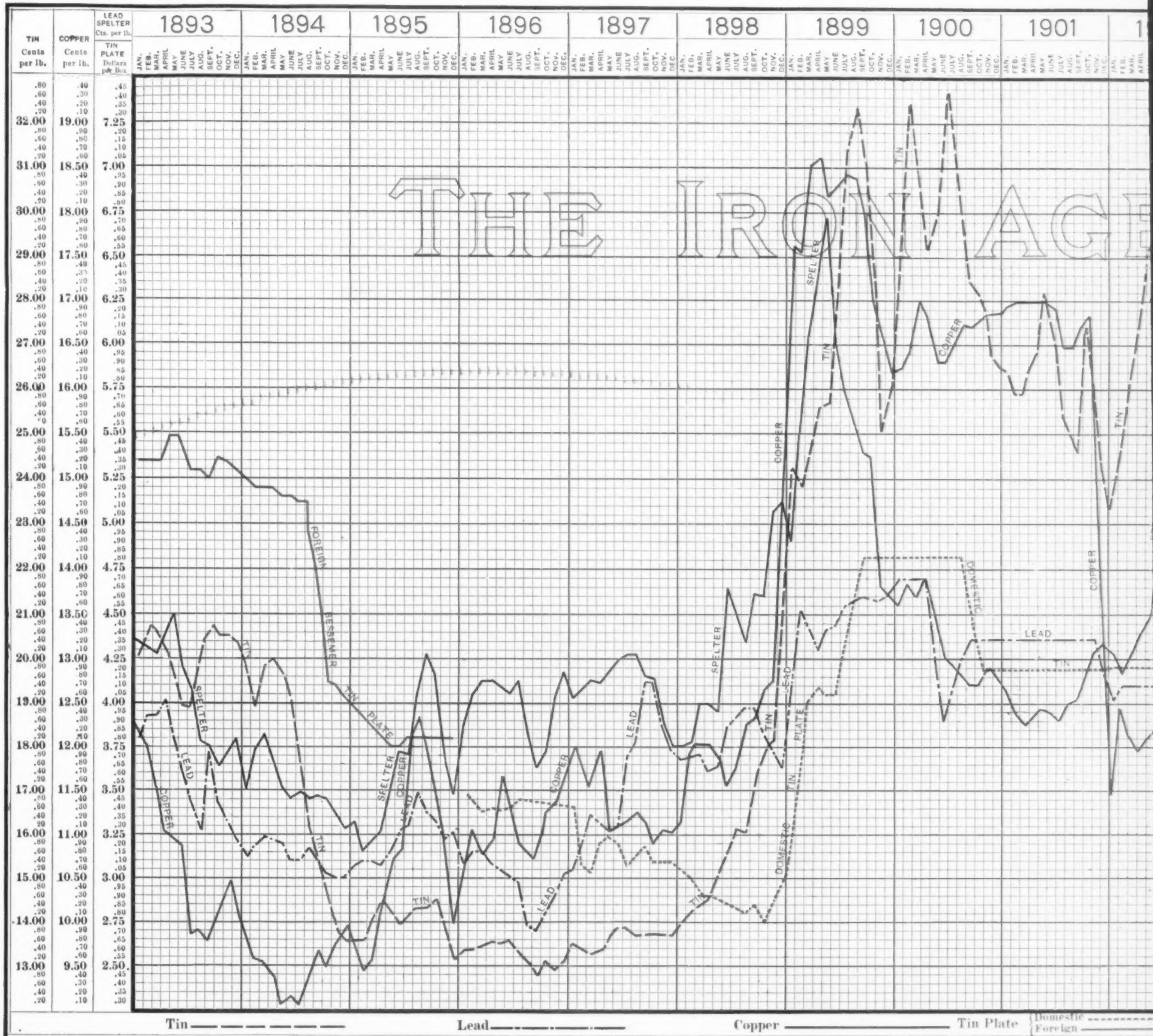
The bill empowers the Comptroller to make out the tax assessments, and all concerns using such power are required to make annually a report to him showing the horse-powers they have obtained from these sources. Failure to pay the tax imposed or the making of false statements by any company is punishable by the imposition of a fine equal to 50 per cent. of the original tax, to be collected in addition to the regular assessment. It is stated that the introducer of the bill does not know how much revenue would be produced by the measure, but it might be from \$700,000 to \$1,000,000 annually.

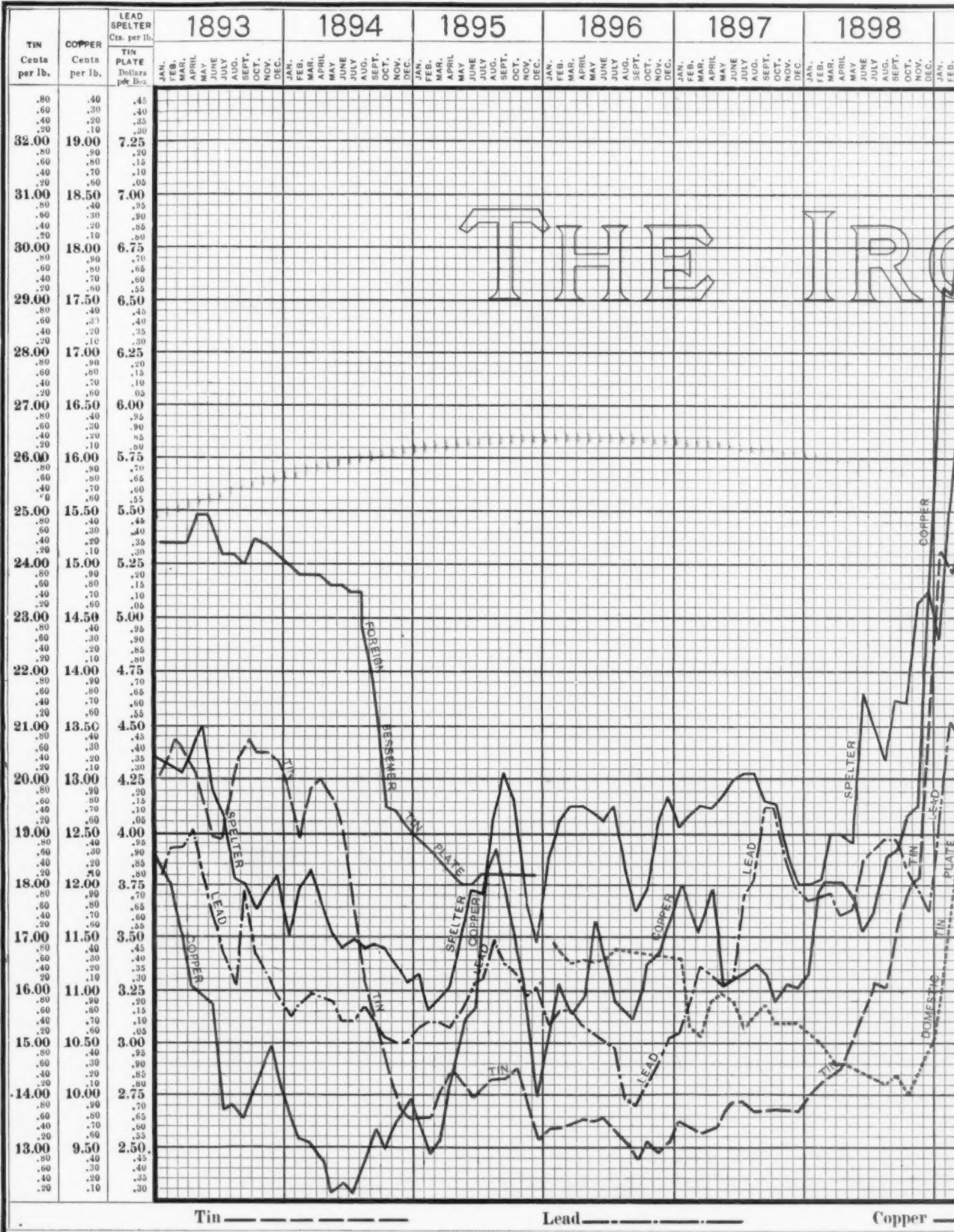
It is evident that the bill aims to give New York State a revenue along the same lines as is received by the commissioners of Victoria Park, on the Canadian side, from the power to be developed on that side of the river. The three power companies on the Canadian side pay an annual rental to the commissioners, and in addition pay at the rate of \$1 per annum for each electrical horse-power over 10,000 up to 20,000, the further payment of 75 cents for each horse-power over 20,000 up to 30,000, and the further payment of 50 cents for each horse-power over 30,000; that is to say, by way of example, that on generation and use and sale or disposal of 30,000 electrical horse-power the gross rental would be \$32,500 per annum, which is payable half yearly.

Four of the seven new open hearth furnaces of the Illinois Steel Company at South Chicago have been started. The new blooming mill will begin operations early in February.

The Standard Steel Car Company, Pittsburgh, has received an order from the Philadelphia & Reading Railroad for 100 steel flat cars and 1000 box cars.

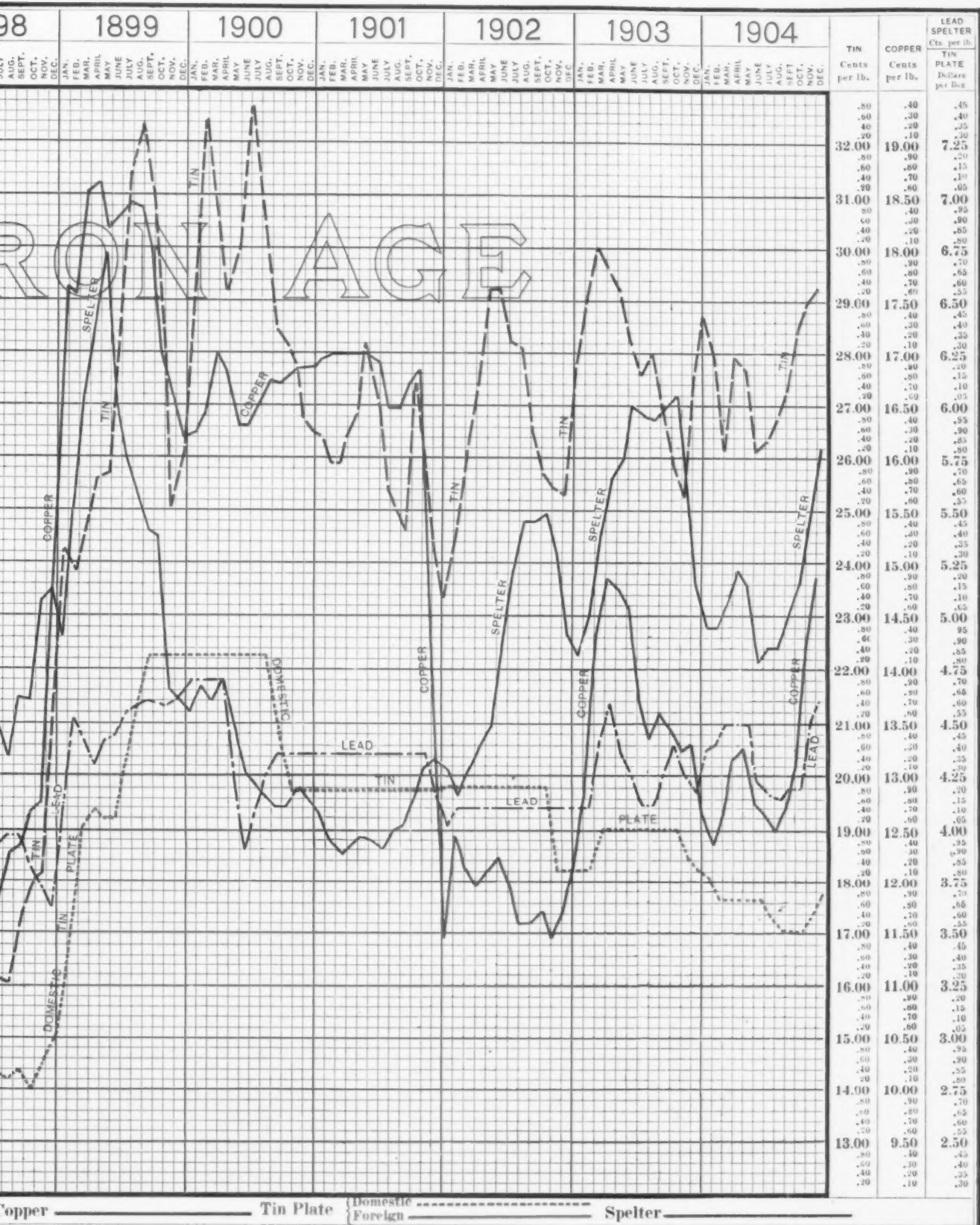




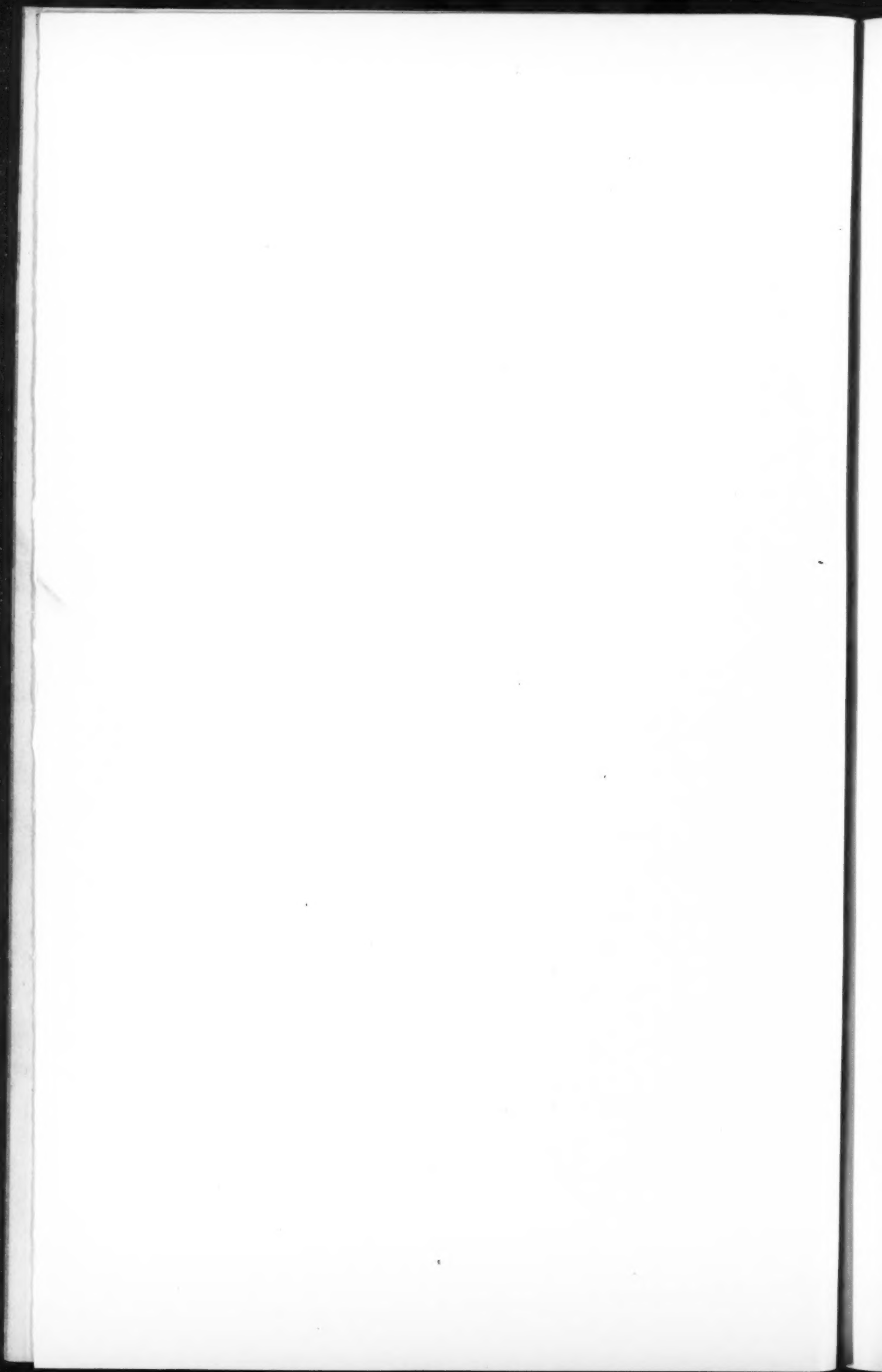


Fluctuations in the Prices of Copper, New York from





Copper, Lead, Tin, Spelter, and Tin Plate in  
from 1893 to 1905.





## Lake Iron Mining Matters.

### The Kloman Mine.

DULUTH, MINN., January 21, 1905.—In connection with a news note in a recent issue of *The Iron Age*, referring to the Flagler Iron & Steel Company and the iron property owned by it, a short statement concerning this latter property seems desirable. The property referred to is the Kloman mine, as was first stated in *The Iron Age* when the Flagler Company took option on it some months ago. Since then the company has spent some time and money in exploring and unwatering the old shafts and in preparing for resumption of operations. On account of defective titles work has not been continuous during the two or three months since option was first taken. Therefore it is impossible that very much work has been done. The mine was a scam when taken over; it had produced about 94,000 gross tons of ore in its previous history—not 400,000 tons as stated by the Flagler Company—and had been idle and abandoned since 1882. Records as to this mine, from the official reports of the State of Michigan for 1898, are as follows:

This property is just across the river (Michigamme) from the most northerly workings of the Republic. It was opened in 1872 and continued active until 1874, when it closed down and filled with water. In 1880 it was unwatered, the company having sold it to the Columbia Iron Company, which operated it till 1882, since which time nothing has been done. There were four open pits and two shafts. A depth in the shafts of 200 feet was attained, and they had opened on the strike of the ore for about 1400 feet. The lenses of specular ore were similar in appearance to the Republic, but the ore was poorer in quality. The lenses finally pinched out, and while there was considerable diamond drilling to discover new bodies, none was located.

This was the condition of the Kloman mine when taken by the Flagler Company this winter. Of course it would seem impossible for the new holders in the limited time at their disposal to have changed the conditions outlined in this report to any great extent. The prospectus of the Flagler Iron & Steel Company indicates that the company banks on this mine as the source of an enormous tonnage, running up to 40,000,000 to 50,000,000 tons, and this estimate is based on a report made to the company and copied in the report. While there is nothing in the geology of the district to indicate the impossibility of a large tonnage in the Kloman, any such figure as is put out by this report to the company may be considered grossly exaggerated. Such mines are not found in that region. The Kloman lies between two bays of the Michigamme, across and  $1\frac{1}{2}$  miles north from the Republic, in a fold of the Negaunee iron bearing formation, between the characteristic quartzite of the range and the Ishpeming formation above it. The geological position is similar to that of the Republic. From this entire Republic trough there has been mined since operations commenced there many years ago about 5,500,000 tons, practically all from one mine, and it is well toward exhaustion.

### The Marquette Range.

About 1000 men will be added at once to the mining force in Ishpeming, nearly half of them for each of the two big companies, the Oliver and Cleveland Cliffs, and 100 at Jones & Laughlins' mine. The Oliver Company is working night shifts at all its important mines. Cleveland Cliffs has resumed at the Moro, put on night crews at Lake mine, is filling other properties with men, and the whole situation is in direct line with the activity shown on all lake ranges and mine centers, where the companies are actually doing far more in the way of increased business than they care to state.

Pickands, Mather & Co. have taken over Barasa mine at Negaunee and will develop it after diamond drilling has determined its value. It lies just north and east of Negaunee mine and has been troubled in the past by abundance of water. Previous efforts have been handicapped by lack of funds and by quicksands that made one attempt to sink a shaft a failure. Considerable drilling by former operators showed much good ore.

### The Mesaba Range.

One of the most important operations of the new year is to be that of stripping Hull and Rust, of the Oliver

Iron Mining Company, south of and adjoining Mahoning, at Hibbing. Arrangements have been made to carry this out at once, and a large part of the stripping equipment recently bought by the company was primarily for this purpose. The two mines have been worked by the square set system underground for some years in a comparatively small way, but since the United States Steel Corporation came into possession there has been opportunity for a larger use of these ores than before and the mines will be heavier producers than when opened underground.

Corrigan, McKinney & Co. have a force of men at work opening a mine on land they bought some time ago west of their Stevenson. So far operations are confined to clearing the land of timber and preparing to sink a working shaft. They hope to mine from this property this year.

By reason of the new steam shovel cut at Fayal mine the Duluth & Iron Range Railroad is to rearrange all its tracks in that vicinity, and instead of coming into Eveleth through Fayal will go around to the south through a deep cut between Fayal and Troy. For this work the removal of 70,000 cubic yards of earth is necessary, and this has been started with one shovel day and night. This is the third time the road has been forced by the growth of Fayal mine to rebuild and rearrange its yard and trackage systems about Eveleth.

Cole & McDonald of Duluth are doing a large amount of diamond drilling on iron ore properties in other districts around the lake. They have two drills working in the old Chester mine, Negaunee, for Jones & Laughlins, who have it under option. Two deep holes have been completed, and both drills are working in others. So far nothing of importance has been found. They may soon have two drills on the property of the Penokee Development Company, which lies west of the Montreal River, in the Gogebic range. They are operating at least one drill near Aitkin and two on the Vermillion range. These are in addition to the work going on along the Mesaba range, which is increasing in quantity.

At Ashland the Chicago & Northwestern road is making a new dock, in its rebuilding operations at No. 1 dock. The new dock will be 13 feet wider and 3 feet higher than the old one, bringing it up to a par with most of the newer and more modern ore piers on the upper lakes.

D. E. W.

### A New Talbot Furnace Record.

All world's records for output and continuous run of open hearth furnaces were broken during the last four months by the Talbot continuous process steel furnace of the Jones & Laughlin Steel Company, Pittsburgh. A total of 20,680 gross tons of open hearth steel was turned out, which leads all other records by 3000 tons. The former record of 18,000 tons was held by the Talbot furnace. A feature of the performance of the furnace, which ended January 15 at noon, and which is considered the most important, is the length of time the metal was kept in the furnace without the furnace being relined. The life of the ordinary 50-ton open hearth furnace is not within two weeks as long as that of the Talbot furnace.

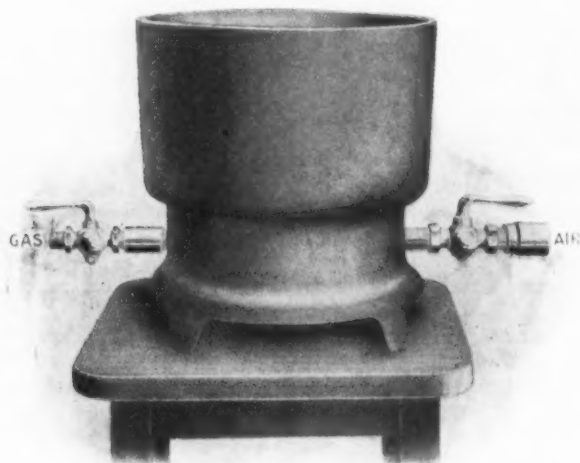
The great demand for steel for the mills of the Jones & Laughlin Company has caused the Talbot, the six open hearth furnaces and the three Bessemer converters to be rushed day and night, and at this rate the supply was not equal to the demand and several of the finishing mills were run light. The mills of the company running at this rate have required 15,000 tons of steel per week. The success of the Talbot furnace has caused the erection by the company of four new furnaces of the same type, the first of which will be put in heat during the coming month, the others to follow at intervals of one or two weeks. When these furnaces are completed the company will have a steel capacity of 3300 tons a day.

The man who has made the Talbot furnace a success in operation and who has in a way caused a decided change in the methods of steel manufacture is John McConnell, the present superintendent of the Talbot furnace.

### The Vesuvius Babbitt Melter.

The apparatus illustrated herewith, known as the Vesuvius babbitt melter, is manufactured by the W. P. Davis Machine Company, Rochester, N. Y., and is intended for the melting of babbitt or other metals. It is made in two sizes, Nos. 1 and 2, the latter being the size usually required. The burner beneath the metal pot receives air under pressure at one side and gas through the pipe at the opposite side. A system of air tubes passes through the gas reservoir on the under side of the melter, in which the air is thoroughly mixed with the gas to secure perfect combustion as the latter leaves the burner. Air is also let in at the bottom of the melter, through the center and around the outside edge of the burner, to insure the maximum amount of heat for the amount of gas burned.

The apparatus is particularly designed for use in the average machine shop where there is occasion to melt soft metals, such as babbitt and other bearing metals. After



The Vesuvius Babbitt Melter, Made by the W. P. Davis Machine Company.

the metal is melted, by turning down the gas the metal can be held at a uniform degree of heat for any length of time, and there is little danger of overheating it. This is a great advantage in many cases, as with some kinds of antifriction metal certain of their properties are changed by overheating, which destroys their efficiency to a great extent.

### Heating and Ventilating Large Buildings by Forced Circulation.

The growth of the modern system of heating by a forced circulation of warm air presents an interesting example of the influence of commercial practicability upon the introduction of a given method or system. For fully a century prior to 1870 various means, many of them extremely crude, had been adopted for forcing heated air through pipes from a central heater and thereby warming distant apartments. In the period from 1848 to 1870 large fans moving air over steam heated surfaces were introduced here and there in large buildings such as hospitals and asylums. But such applications were distinctly limited because both fan and heater had to be specially designed and constructed for the work.

It was not until 1869 that such a heating apparatus became commercially practicable. At that time B. F. Sturtevant of Boston, Mass., who had been for some years engaged in the manufacture of fan blowers, conceived the idea of attaching a small tubular heater, through which air was drawn and heated and forced by the fan to the distant points. The entire arrangement was compact, portable and easily applied, particularly to small apartments. Large installations, however, required a sectional type of heater and in course of time there was evolved the present type of Sturtevant heater,

consisting of a series of cast iron sections, into which a system of steel steam pipes is screwed and through which the steam circulates. The sections, made in quantity in standard sizes, are grouped to conform with the requirements and connected to the fan in such a manner as to insure its most efficient action. Without some such simple and marketable arrangement it is doubtful if even to this day the benefits of mechanical ventilation and heating would have been realized.

### The Buffalo Foundrymen's Association.

The regular annual meeting of the Buffalo Foundrymen's Association was held in its headquarters in the Builders' Exchange Building, January 17, with 30 members and several visitors present. H. W. Wendt of the Buffalo Forge Company, who has been president for the past five years, declining to serve longer, the committee appointed for the purpose of making nominations of officers for the ensuing year, composed of O. P. Letchworth, C. M. Greiner and E. C. Lufkin, reported the following ticket: President, Lyman P. Hubbell of the Fillmore Avenue Foundry & Iron Works; vice-president, William H. Barr of the Lumen Bearing Company; treasurer, C. M. Farrar of Farrar & Trefts; secretary, John E. Gorss. The five following were nominated for members of the Executive Committee: The nominees for president and vice-president and H. D. Miles of the Buffalo Foundry Company, T. L. Richmond of the Buffalo Scale Company and Edward Kener of the Buffalo Co-operative Stove Company.

The result of the ballot showed that the ticket named was unanimously elected. In accepting his election President Hubbell very warmly thanked the members for the honor done him and briefly outlined a policy, in which every member concurred, that will make the future meetings both interesting and instructive.

M. L. Cramer of the Snow Steam Pump Works was introduced and read a highly interesting paper on "Molding Machines," for which a vote of thanks was tendered him.

The following were in attendance:

F. R. Dunn, American District Steam Company.  
H. D. Miles, Buffalo Foundry Company.  
R. G. Rippel, Buffalo Foundry Company.  
F. C. Warhus, Buffalo Co-operative Stove Company.  
T. L. Richmond, Buffalo Scale Company.  
W. R. Taylor, Bingham & Taylor.  
H. N. Ebling, Dobbie Foundry & Machine Company.  
John C. Trefts, East Buffalo Iron Works.  
Charles F. Ernst, Charles F. Ernst's Sons.  
Lyman P. Hubbell, Fillmore Avenue Foundry & Iron Works.  
F. M. Fries, Fries & Co. Brass Foundry.  
William Cullen, Frontier Iron Works.  
H. D. Hixon, Gardner Foundry Company.  
Peter M. Glinther, J. Glinther's Sons.  
Gibson Howard, Howard Iron Works.  
F. R. Cooley, Lancaster Malleable Iron Works.  
J. J. Lawler, Lawler Iron Works.  
W. H. Barr, Lumen Bearing Company.  
Geo. R. Mumschauer, Niagara Machine & Tool Works.  
Fred. Schnell, Noye Mfg. Company.  
Thos. J. O'Brien, O'Brien's Foundry Company.  
John W. Pohlmann, Pohlmann's Foundry.  
O. P. Letchworth, Pratt & Letchworth Company.  
E. B. McKenna, Standard Foundry Company.  
M. R. Cramer, Snow Steam Pump Works.  
J. H. B. Bryan, Snow Steam Pump Works.  
L. C. Dodd, Snow Steam Pump Works.  
Robert C. Hickok, Trout & Hickok.  
John C. Trefts, Farrar & Trefts.  
Geo. D. Hayes, U. S. Cast Iron Pipe & Foundry Company.

The Uncas Power Company, Norwich, Conn., has petitioned the Connecticut Legislature for incorporation, with the purpose of establishing a water power plant to generate electricity for sale in Norwich and New London. The petitioners are G. O. Jackson, E. W. Higgins and C. W. Comstock. If the plan is carried out, the result in Norwich will be interesting, because of the presence of a compressed air system by which compressed air is delivered to many shops and factories, and also because of the fact that the city recently took over the city's electric plant, to try the experiment of municipal ownership.



### The Humphrey Clutch.

The automatic clutch, or cut off coupling, shown in the accompanying illustrations is designed for connecting two prime movers when working together, such as a water wheel and an engine or two water wheels, where it is desirable to have the auxiliary power take up its load without shock or jar. The arrangement is such that as long as the main source of power is capable of carrying the load the reserve runs idly, but if the load exceeds the capacity of the main power the secondary machine becomes active in driving.

Fig. 1 shows the general appearance of the clutch and Fig. 2 drawings indicating the construction. As will be seen, the device consists of few parts: the driving hub D

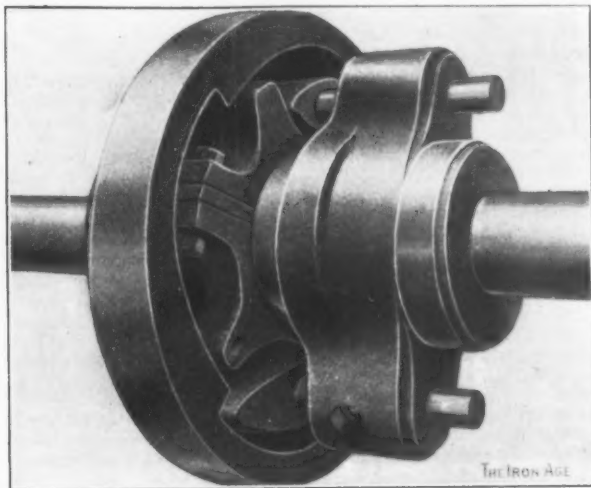


Fig. 1.—The Humphrey Clutch, or Cut Off Coupling.

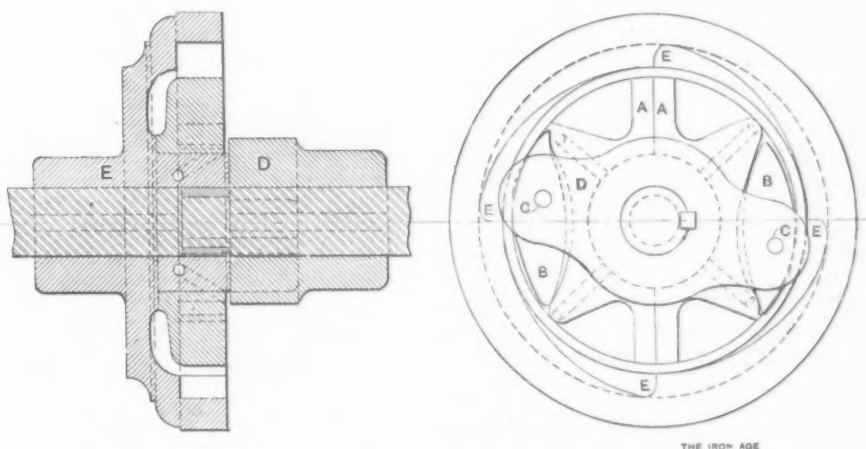


Fig. 2.—A Section and End View of the Humphrey Clutch.

connected with the auxiliary source of power and carrying the steel pawls B B on strong pins, C C; the driven hub E keyed to the shaft, which is driven by the main source of power, and the keeper A, which fits loosely on the driving hub. While the driven member E is running faster than the driver D the pawls are held as shown in Fig. 2, but when the speed of D exceeds that of E by about one-sixteenth of a revolution the pawls are forced out, engaging the pockets in E, as shown in Fig. 1, thus imparting the auxiliary power. If it should be desirable the driver may be started while the driven member is at rest, so that the secondary source supplies power without the aid of the main source.

To illustrate the mission of the clutch, suppose that the shaft to which the driven member E is attached receives its power from a turbine water wheel, and the driver D from a steam engine used as an auxiliary to

the turbine. While the water wheel develops sufficient power the driven part E revolves faster than D until additional power is required by the machinery beyond that which the turbine can supply. The shaft and the driven part of the clutch will then slow down until they are running slower than the driver. The pawls will be forced out so that the clutch engages and the power of the engine is added to that of the turbine. This action is entirely automatic and without shock when the union of the two powers takes place.

The shaft of the driver projects about 3 inches into a hole in brass bushings on the end of the driven shaft, thus insuring perfect alignment of the two shafts. The keeper A is made in two parts bolted together to make it easy of adjustment and allow for its removing. The clutch is manufactured by the Humphrey Machine Company, Keene, N. H.

**The Employers' Association of Cincinnati.**—This organization held its annual meeting at the Business Men's Club, January 18. The executive session was preceded by a dinner, in which 200 members and guests participated. The meeting was called to order by President Pugh, after which Secretary Waltz made his annual report, in which he earnestly solicited the promulgation of the statement that the Employers' Association was not organized for the purpose of taking away any of the prerogatives of the laboring man, but that its sole aim and purpose was so to conduct the controversies continually arising between the employer and employee that both capital and labor should receive a just recompense for their services. Following are the officers elected: President, A. H. Pugh; first vice-president, Henry Rattermann; second vice-president, Ernest F. Du Brul; third vice-president, Wm. Lodge; treasurer, Dr. J. M. Crawford; Executive Committee: J. C. Hobart, Samuel Bailey, H. C. Yeiser, Fred A. Geier, J. S. Neave, H. H. Meyer,

Louis Hauck, M. E. Moch, S. F. Dana, R. R. Reynolds, M. B. Farrin and Geo. Hummel. The secretary, who will undoubtedly be Charles Waltz, is to be elected by the board. The Executive Committee is an exceptionally strong one, being composed of some of the city's most substantial men. During the course of his remarks, President Pugh made the statement that during the past year it was necessary to solicit some assistance from non-members to carry on the work, and that a hearty response had been received to the appeal, but the association is now growing so rapidly that the officers are confident of being financially able to consummate their plans. Addresses were also made by J. C. Hobart, Rev. Mr. Nelson, Henry A. Faber, Robert Wuest and Chas. F. Williams, the last named speaking at length on the condition of the molders' strike, as it referred to the employers of Cincinnati and Newport.

### The Fifth National Automobile Show.

Saturday evening, January 14, New York's Fifth National Automobile Show was opened at Madison Square Garden. It was the largest and by all odds the best of the series, and taxed the accommodations of the Garden to the utmost. It is stated that had all those been admitted who applied for exhibition space it would have required about five times the floor space the Garden affords. Every available corner was occupied; not only the main floor, central boxes, tier boxes and balcony spaces, but all of the available annexes, such as the restaurant, concert hall and exhibition hall are filled. Naturally the question that is perplexing some is what will be done in future years if the present rate of growth continues. This show was the last of the series contracted for three years ago between the Madison Square Garden Company, the National Association of Automobile Manufacturers and the Automobile Club of America. It is announced that a contract has been closed between the Madison Square Garden Company and the Association of Licensed Automobile Manufacturers, under the terms of which the management of future automobile shows will be under the control of the association. This will mean the elimination of all independent companies, and will in a measure solve the question which has perplexed the recent management. The association includes 39 big manufacturers. Just what measures will be taken by all of the other manufacturers has not been determined, but doubtless some provision will be made for them to display their product in exhibitions of some sort, just as this year the importers were forced to hold a separate exhibition in Herald Square Exhibition Hall, which was referred to last week.

The national show this year established a record for the amount of business done by the exhibitors during its week of duration. Satisfaction was expressed on all sides at the result, and it was reported that several exhibitors sold the product of their factories for six months ahead, and some even a year. Among the exhibits were included about 100 makes of complete automobiles, with a total of about 300 cars shown. Of the 1905 models it may be said that the advance indicated in the American practice is much more marked than that shown by foreign makes, partly for the reason that the foreign machines have heretofore unquestionably been of higher grade generally than has been attained by domestic makers. It is safe to say that the American machines are now quite on a par with those of foreign manufacture, but it remains to be seen what another year may do toward putting them in the front rank. As shown by a canvass of the machines exhibited, the principal tendencies are toward four-cylinder rather than two-cylinder motors, pressed steel rather than wood or structural iron frames, side door openings in the tonneau rather than rear openings, longer wheel base and more elegant bodies. A number of new mechanical features were in evidence. One concern showed a new disk clutch with certain features of excellence and another a three-speed planetary gear, which is an innovation, as heretofore two speeds have been all that were obtainable in planetary drives. Another practice which is attaining ascendancy is the use of air cooled rather than water cooled motors.

For medium priced cars American manufacturers have long held the leadership, and a great variety of these was shown at the recent show. The prices ranged from \$450 to \$850, and the runabouts were fitted with engines of from 4 to 10 horse-power. Light touring cars had a capacity of 12 to 16 horse-power, carried four passengers and sold at from \$1600 to \$2000. Heavier touring cars cost from \$3000 to \$5000 and developed from 24 to 40 horse-power. Still more expensive machines were of a more luxurious character, with special features, such as the limousine top and other special fixtures which add much to their cost.

As is usual, the week was filled with numerous social functions. Sunday evening, January 15, the New York Motor Club gave a dinner at the Hotel Astor, at which Sir Thomas Dewar, a member of the British Parliament and an enthusiastic automobilist, was the guest of honor.

Monday the American Automobile Association held its annual meeting at the Hotel Saville, and the annual banquet of that organization took place the same evening at the Waldorf-Astoria. The third annual banquet of the Hyatt Roller Bearing Company, of which mention was made January 5, was held Wednesday evening at Bretton Hall. A smoker and vaudeville entertainment was given Friday evening by the National Association of Automobile Manufacturers, and on Saturday evening the concluding affair was the annual dinner of the Automobile Club of America at the Waldorf-Astoria. The show closed on Saturday night. The total number of exhibitors, including manufacturers and agents of automobile parts, accessories and supplies, was nearly 250, a list of which follows:

Acme Motor Car Company, Reading, Pa.  
 Allers, H. A., & Co., "Solarine," 203 Broadway, New York.  
 American Ball Bearing Company, The Edgewater Park and L. S. & M. S. R. R., Cleveland, Ohio.  
 American Coil Company, West Somerville, Mass.  
 American Electrical Novelty & Mfg. Company, Spring, Hudson and Vandam streets, New York.  
 American Lubricator Company, Detroit, Mich.  
 American Motor Company, "Marsh Motor Cycle," Brockton, Mass.  
 American Roller Bearing Company, South Framingham, Mass.  
 Angiull, Luigi, 180 Centre street, New York City.  
 Apperson Brothers Automobile Company, Kokomo, Ind.  
 Ardsley Motor Car Company, Yonkers, N. Y.  
 Atwater Kent Mfg. Company, 112 North Sixth street, Philadelphia, Pa.  
 Aurora Automatic Machinery Company, Aurora, Ill.  
 Auto Supply Company, 1662 Broadway, New York.  
 Austin Automobile Company, 88 Division street, Grand Rapids, Mich.  
 Autocar Company, Ardmore, Pa.  
 Autocar Equipment Company, 240 West Lake street, Chicago, Ill.  
 Autocoll Company, Jersey City, N. J.  
 Badger Brass Mfg. Company, Kenosha, Wis., 11 Warren street, New York.  
 Baker Motor Vehicle Company, 116 Jessie street, Cleveland, Ohio.  
 Baldwin Chain & Mfg. Company, 31 Hermon street, Worcester, Mass.  
 Bartholomew Company, The, Peoria, Ill.  
 Blomstrom, C. H., Motor Company, 1294 River street, Detroit, Mich.  
 Black Diamond Automobile Company, 708 Genesee street, Utica, N. Y.  
 Bowser, S. F., & Co., Incorporated, Fort Wayne, Ind.  
 Breeze Motor Mfg. Company, 33 Court street, Newark, N. J.  
 Brennan Motor Company, 107 Grape street, Syracuse, N. Y.  
 Brew-Hatcher Company, 32 Columbus street, Cleveland, Ohio.  
 Briscoe Mfg. Company, Woodward avenue, Detroit, Mich.  
 Brown, James, Machine Company, 481 Main street, Pawtucket, R. I.  
 Brown, William Hiram, 124 West Jackson boulevard, Chicago, Ill.  
 Brown-Lipe Gear Company, Syracuse, N. Y.  
 Brown & Sharpe Mfg. Company, Providence, R. I.  
 Brown-Wales Company, Boston, Mass.  
 Buffum, H. H., Company, Abington, Mass.  
 Buick Motor Car Company, Jackson, Mich.  
 Byrne-Kingston & Co., Kokomo, Ind.  
 Cadillac Automobile Company, 1343 Case avenue, Detroit, Mich.  
 Carlyle-Johnson Machine Company, 356 Asylum street, Hartford, Conn.  
 Chicago Pneumatic Tool Company, 95 Liberty street, New York.  
 Cleveland Car Specialty Company, Cleveland, Ohio.  
 Cleveland Motor Car Company, 388 Erie street, Cleveland, Ohio.  
 Coldwell Lawn Mower Company, Newburgh, N. Y.  
 Columbia Lubricants Company of New York, 78 Broad street, New York.  
 Commercial Motor Company, 49 West Sixty-sixth street, New York.  
 Concentrated Acetylene Company, Indianapolis, Ind.  
 Consolidated Mfg. Company, Toledo, Ohio.  
 Constant Spark Plug Company, 135 Oliver street, Boston, Mass.  
 Continental Caoutchouc Company, 298 Broadway, New York.  
 Cooks' Sons, Adam, 313 West street, New York.  
 Cooper, Dr. T. J., 114 Water street, Paterson, N. J.  
 Corbin Motor Vehicle Corporation, New Britain, Conn.  
 Covert Motor Vehicle Company, Lockport, N. Y.  
 Cramp, Wm., & Sons Ship & Engine Building Company, Beach and Ball streets, Philadelphia, Pa.  
 Crest Mfg. Company, 172 Freeport street, Dorchester, Mass.  
 Cross, W. H., 18 Franklin street, Brooklyn, N. Y.  
 Curtis Mfg. Company.  
 Custead, W. D., 44 Park place, New York.  
 Daimler Mfg. Company, 939 Steinway avenue, Long Island City, N. Y.  
 Dayton Electrical Mfg. Company, Dayton, Ohio.  
 De Dietrich & Co., 1½ West Thirty-fourth street, New York.  
 Demmerle & Co., 248 West Twenty-third street, New York.  
 Detroit Automobile Mfg. Company, Detroit, Mich.  
 Detroit Steel Products Company, 91 East Fort street, Detroit, Mich.  
 Diamond Rubber Company, 15 Warren street, New York.



- Dietz, R. E., Company, 60 Laight street, New York.  
 Dolson, John L., & Sons, Charlotte, Mich.  
 Dow Portable Electric Company, Braintree, Mass.  
 Duane, W. J., & Co., 1900 Broadway, New York.  
 Duff Mfg. Company, Allegheny, Pa.  
 Duryea Power Company, Reading, Pa.  
 Eastern Carbon Works, Jersey City, N. J.  
 Edison Storage Battery Company, Glen Ridge, N. J.  
 Eisenhuth Horseless Vehicle Company, Middletown, Conn.  
 Electric Contract Company, 202 Centre street, New York.  
 Electric Vehicle Company, Hartford, Conn.  
 Elmore Mfg. Company, Clyde, Ohio.  
 English & Mersick Company, 70 Crown street, New Haven, Conn.  
 Federal Mfg. Company, Elyria, Ohio.  
 Firestone Tire & Rubber Company, Akron, Ohio.  
 Flisk Rubber Company, Chicopee Falls, Mass.  
 Ford Motor Company, Detroit, Mich.  
 Franklin, H. H., Mfg. Company, Syracuse, N. Y.  
 Frasse & Co., Peter A., New York.  
 Funke, A. H., 83 Chambers street, New York.  
 G. & J. Tire Company, 549-617 E. Georgia street, Indianapolis, Ind.  
 Gas Engine & Power Company & Charles L. Seabury Company, Consolidated, Morris Heights, N. Y.  
 Gleason-Peters Air Pump Company, 20 West Houston street, New York.  
 Goodrich, B. F., Company, Akron, Ohio.  
 Goodyear Tire & Rubber Company, 1144 N. Market street, Akron, O., 253 W. Forty-seventh street, New York.  
 Gray & Davis, Amesbury, Mass.  
 Grout Bros. Automobile Company, Orange, Mass.  
 Hardy, R. E., Company, 225 West Broadway, New York.  
 Hartford Rubber Works Company, Hartford, Conn.  
 Hartford Rubber Works Company, New Brunswick, N. J.  
 Hartford Suspension Company, 67 Vestry street, New York.  
 Haynes-Apperson Company, Kokomo, Ind.  
 Hendee Mfg. Company, Springfield, Mass.  
 Herz & Co., 55 Grand street, New York.  
 Hess-Bright Mfg. Company, 619 Pennsylvania avenue, Philadelphia, Pa.  
 Hill Mfg. Company, 1390 West avenue, Buffalo, N. Y.  
 Hine Watt Mfg. Company, 60 Wabash avenue, Chicago, Ill.  
 Hjorth, Wm., & Co., Jamestown, N. Y.  
 Howell, T. P., & Co., 72 New street, Newark, N. J.  
 Hussey Drop Forge & Mfg. Company, Axtell street, Cleveland, Ohio.  
 Hyatt Roller Bearing Company, Harrison, N. J.  
 Imperial Wheel Company, Flint, Mich.  
 International Auto & Vehicle Tire Company, 92 West Broadway, New York.  
 Iron Clad Mfg. Company, 204 Varet street, Brooklyn, N. Y.  
 Jackson Automobile Company, Jackson, Mich.  
 Jeffrey, Thos. B., & Co., Kenosha, Wis.  
 Jersey Brake Company, 50 Columbia street, cor. Greene, Newark, N. J.  
 Jones, Joseph W., 127 West Twenty-second street, New York.  
 Jones, Phineas, & Co., 301 Market street, Newark, N. J.  
 Kells, W. J., Mfg. Company, Newark avenue, corner West Side, Jersey City, N. J.  
 Kirk Mfg. Company, Toledo, Ohio.  
 Klean-Al Mfg. Company, New York.  
 Knox Automobile Company, Springfield, Mass.  
 Lane Motor Vehicle Company, Prospect street, Poughkeepsie, N. Y.  
 Lear, Oscar, Automobile Company, Fourth and Gay streets, Columbus, Ohio.  
 Lehman, I., 61 Middle street, Cleveland, Ohio.  
 Light Mfg. & Foundry Company, Pottstown, Pa.  
 Lighthouse & Co., Chas. F., 1769 Broadway, New York.  
 Locomobile Company of America, Bridgeport, Conn.  
 Logan Construction Company, Chillicothe, Ohio.  
 Lozier Motor Company, 1 Broadway, New York.  
 Lunkenheimer Company, 26 Cortlandt street, New York.  
 McCord & Co., 1475 Old Colony Building, Chicago, Ill.; 24 Broad street, New York.  
 McGlehan Odometer & Mfg. Company, 137 West Thirty-second street, New York.  
 Mack Bros. Company, 532-540 Atlantic avenue, Brooklyn, N. Y.  
 Manufacturers' Foundry Company, Waterbury, Conn.  
 Marlon Motor Car Company, 113 Monument place, Indianapolis, Ind.  
 Matheson Motor Car Company, Limited, Holyoke, Mass.  
 Maxwell-Briscoe Motor Company, Tarrytown, N. Y.  
 Merrell-Stevens Mfg. Company, Kalamazoo, Mich.  
 Mesinger, H. & F., Mfg. Company, 1801 First avenue, New York.  
 Metz, Charles H., Waltham, Mass.  
 Meyrowitz Mfg. Company, 104 East Twenty-third street, New York.  
 Michigan Automobile Company, Kalamazoo, Mich.  
 Michigan Steel Boat Company, Detroit, Mich.  
 Midgley Mfg. Company, Columbus, Ohio.  
 Miller, Chas. E., 97 Reade street, New York.  
 Miller & Sons, John, Montreal and Toronto.  
 Mitchell Motor Car Company, Racine, Wis.  
 Model Gas Engine Works, Auburn, Ind.  
 Morgan & Wright, Incorporated, 331 West Lake street, Chicago, Ill.  
 Motor Car Equipment Company, 43 Cortlandt street, New York.  
 Motsinger Device Mfg. Company, Pendleton, Ind.  
 Meyers & Alexander, 239 East Twenty-seventh street, New York.  
 Napier Motor Company of America, 743 Boylston street, Boston, Mass.  
 National Car Wheel Company, Rochester, N. Y.  
 National Carbon Company, Cleveland, Ohio.  
 National Motor Vehicle Company, Indianapolis, Ind.  
 New York Edison Company, 55 Duane street, New York.  
 New York Sporting-Goods Company, 61 Nassau street, New York.  
 New York & New Jersey Lubricant Company, 14 Church street, New York.  
 Norman Motor Sleigh Company, 40 State street, Boston, Mass.  
 Northern Mfg. Company, Detroit, Mich.  
 Ofeldt, F. W., & Sons, foot of Twenty-fifth street, Brooklyn, N. Y.  
 Olds Motor Works, 50 Concord avenue, Detroit, Mich.  
 Oliver Mfg. Company, "Peerless Automobile Jacks," 203 South Desplaines street, Chicago, Ill.  
 Packard Motor Car Company, Detroit, Mich.  
 Palais de l'Automobile, 500 Fifth avenue, New York.  
 Panhard & Le Vassor Automobile Company, 230 West Thirtieth street, New York.  
 Pantasote Company, 11 Broadway, New York.  
 Parish & Bingham Company, Cleveland, Ohio.  
 Parker, Henry F., 53 Henry avenue, Newburgh, N. Y.  
 Patterson, Gottfried & Hunter, 146 Centre street, New York.  
 Peerless Motor Car Company, Lisbon street, Cleveland, Ohio.  
 Pennsylvania Rubber Company, Jeannette, Pa.  
 Phelps Motor Vehicle Company, Stoneham, Mass.  
 Pierce, George N., Company, 58 Main street, Buffalo, N. Y.  
 Pierce Engine Company, Racine, Wis.  
 Pittsfield Spark Coil Company, Cottage Row, Pittsfield, Mass.  
 Pneumatic Tire Protector Company, 16-20 South St. Clair street, Dayton, Ohio.  
 Poly-Phase Ignition System Company, 52 Broadway, New York.  
 Pope Mfg. Company, 21 Park-row, New York.  
 Pope-Robinson Company, Hyde Park, Mass.  
 Post & Lester Company, Hartford, Conn.  
 Premier Motor Mfg. Company, 914 Fort Wayne avenue, Indianapolis, Ind.  
 Prescott Automobile Mfg. Company, 90 West Broadway, New York.  
 Pungs-Finch Automobile & Gas Engine Company, 1524 Jefferson avenue, Detroit, Mich.  
 Reid Mfg. Company, Detroit, Mich.  
 Reliance Motor Car Company, 67 Fort street, East Detroit, Mich.  
 Reliance Motor Cycle Company, Addison, N. Y.  
 Remy Electric Company, Anderson, Ind.  
 Reo Motor Car Company, Lansing, Mich.; 138 West Thirty-eighth street, New York.  
 Roche, Wm., 52 Park place, New York.  
 Rose Mfg. Company, Philadelphia, Pa.  
 Royal Motor Car Company, corner Lake and Marquette streets, Cleveland, Ohio.  
 Rushmore Dynamo Works, Plainfield, N. J.  
 Saks & Co., Thirty-third street and Broadway, New York.  
 St. Louis Motor Carriage Company, St. Paul Building, New York.  
 Schwarz Wheel Company, Twelfth and Cherry streets, Philadelphia, Pa.  
 Scoville & Peck Company, 15 Wooster street, New Haven, Conn.  
 Shelby Steel Tube Company, Frick Building, Pittsburgh, Pa.  
 Smith, Edward, & Co., 45 Broadway, New York.  
 Smith, A. O., Company, Milwaukee, Wis.  
 Smith & Mabley Mfg. Company, 614 East Eighty-third street, New York.  
 Solarine Company, Chicago, Ill.  
 Splittorf, C. F., 17 Vandewater street, New York.  
 Sprague Umbrella Company, Norwalk, Ohio.  
 Springer Motor Vehicle Company, 242 West Forty-first street, New York.  
 Springfield Metal Body Company, Brightwood, Springfield, Mass.  
 Standard Motor Construction Company, 180 Whiton street, Jersey City, N. J.  
 Standard Welding Company, Cleveland, Ohio.  
 Standard Wheel Company, Terre Haute, Ind.  
 Stearns, F. B., Company, Euclid avenue and Lake View, Cleveland, Ohio.  
 Steel Ball Company, 832 Austin avenue, Chicago, Ill.  
 Stevens, J., Arms & Tool Company, Chicopee Falls, Mass.  
 Studebaker Automobile Company, South Bend, Ind.  
 Swinehart-Clincher Tire & Rubber Company, Akron, Ohio.  
 Thomas, E. R., Motor Company, Buffalo, N. Y.  
 Timken Roller Bearing Axle Company, Canton, Ohio.  
 Tokheim Mfg. Company, Cedar Rapids, Iowa.  
 Trebert Auto & Marine Motor Company, 407 St. Paul street, Rochester, N. Y.  
 Twentieth Century Mfg. Company, 17 Warren street, New York.  
 Union Automobile Company, Oakdale, Mass.; Union City, Ind.  
 United Electrical Mfg. Company, 43 Murray street, New York.  
 Upton Motor Company, Lebanon, Pa.  
 Utility Company, 231 Greenwich street, New York.  
 Vacuum Oil Company, 29 Broadway, New York.  
 Valentine & Co., 257 Broadway, New York.  
 Veeder Mfg. Company, Hartford, Conn.  
 Vehicle Equipment Company, Rainier Company, sole selling agents, Broadway, corner Fiftieth street, New York.  
 Waltham Mfg. Company, Waltham, Mass.  
 Warner Gear Company, Muncie, Ind.  
 Warner Instrument Company, Beloit, Wis.  
 Warren Automobile Company, Warren, Pa.  
 Wayne Automobile Company, Dubois and Franklin streets, Detroit, Mich.  
 Webb Company, 21 Park row, New York.  
 Welch Motor Car Company, Detroit and Pontiac, Mich.  
 Weston-Mott Company, Utica, N. Y.

Wheelock Motor Car Clock Company, Tremont Building, Boston, Mass.  
 Wheeler Mfg. Company, 10 Baltimore, West Detroit, Mich.  
 White Sewing Machine Company, 300 Rose Building, Cleveland, Ohio.  
 Whitlock Coll Pipe Company, Hartford, Conn.  
 Whitney Mfg. Company, Hartford, Conn.  
 Willis, E. J., Company, 8 Park place, New York.  
 Winton Motor Carriage Company, Berea road, Cleveland, Ohio.  
 "Wolverine," Detroit, Mich.  
 Worthington Automobile Company, 547 Fifth avenue, New York.  
 Wray Pump & Register Company, Rochester, N. Y.  
 Young, O. W., 174 Frelinghuysen street, Newark, N. J.

## Philippine Tariff Revision.

### Changes in Schedules as Finally Approved.

WASHINGTON, D. C., January 24, 1905.—The schedules of the projected revision of the Philippine tariff, which have just been completed and finally approved by the Secretary of War, for enactment by Congress, have undergone a number of changes since the publication of the metal and machinery schedules in these columns. The changes have been made with special reference to the development of the resources of the islands, and while they will curtail the revenues somewhat it is believed they are fully justified by existing conditions. Incidentally they will increase the purchasing power of manufacturers engaged in business in the archipelago and, as the articles upon which the tariff is reduced are chiefly imported from the United States, some benefit will be conferred upon American producers.

#### Rate on Engines and Boilers.

Paragraph 245 of the Philippine tariff provides the very low rate of 5 per cent. ad valorem on "agricultural machinery and apparatus, machinery and apparatus for pile driving, dredging, hoisting and making or repairing roads, for refrigerating and ice making, for making sugar, for preparing rice or hemp and other vegetable products of the islands for market, and detached parts therefor." The point has been raised by American boiler and engine builders that while under a liberal construction of the tariff a boiler or engine intended for use in connection with agricultural machinery would be entitled to the minimum rate, yet in view of the fact that in paragraph 243 "stationary engines, pumps, hydraulic, steam, petroleum, gasoline and hot or compressed air motors" are specifically provided for at 15 per cent. ad valorem, it is probable that duty would be assessed on engines and boilers, even though designed for agricultural purposes, at the rate of 15 per cent. rather than 5 per cent. To avoid all ambiguity, therefore, paragraph 245 has been amended so as to include "engines and boilers adapted to and imported for and with rice threshing machines and steam plows." Inasmuch as the present rate of duty on all the articles included in paragraph 245, though specific, is much in excess of 5 per cent., the change in both rate and classification is counted upon to stimulate imports very materially.

#### Electrical Machinery Reduced.

Another important change has been made in the rates of duty on electrical machinery, the rate of 20 per cent. provided by the original revision having been cut to 5 per cent. This modification includes the following three paragraphs:

- 248. Apparatus and appliances for the generation, distribution, testing, measuring and installation of electricity, dry and wet batteries, carbon brushes, arc lamps and their fittings, insulating materials, tapes and compounds used exclusively for electrical purposes; bells, enunciators, telephones and apparatus pertaining to the same; galvanometers, amperemeters, voltmeters and wattmeters, and all or any parts of apparatus specified, including insulators or glass or porcelain or other material, per centum ad valorem..... 5
- 249. Storage batteries, per centum ad valorem..... 5
- 250. Dynamos, generators, excitors and all other machinery for the generation of electricity for lighting or for power; transformers and electric motors, per centum ad valorem..... 5

Owing to the desire to maintain the "open door" principle in the Philippines, and because of the terms of the

peace treaty with Spain, the Administration has not been willing to grant any special favors in the way of preferential rates to American products. It has nevertheless been found entirely practicable to provide a low rate of duty for certain classes of goods which happen to be imported chiefly from the United States. This consideration, as well as a desire to reduce the cost of the article as much as possible, has induced the Department to cut the rate provided in the original draft of the revision on typewriters from 25 to 15 per cent. ad valorem. The existing tariff law provides a specific rate of \$4 each on typewriters, which on the basis of the wholesale invoiced price is reckoned at about 8 per cent. The imports in the fiscal year 1904 amounted to 1037 machines, valued at \$48,638, of which the United States furnished 1024, valued at \$47,750. The Commission which prepared the original revision of the tariff reached the conclusion that this article should supply a much larger amount of duty than heretofore, and therefore advanced the rate to 25 per cent., which on the basis of last year's importations would have netted about \$12,000. American manufacturers, however, have assured the Department that the proposed increase from about 8 to 25 per cent. would severely curtail their sales in the islands, and the item has therefore been reduced to 15 per cent.

#### Drawback Law for the Islands.

An important administrative provision has been added to the Philippine tariff revision embracing substantially the text of section 30 of the Dingley act, commonly known as the Drawback law. This provision has been modified, however, so as to widen its scope somewhat and avoid a class of controversies that have made a great deal of trouble for American producers, for the Treasury Department and for the United States courts. Section 30 now provides that "where imported materials on which duties have been paid are used in the manufacture of articles manufactured or produced in the United States there shall be allowed on the exportation of such articles a drawback equal in amount to the duties paid on the materials used less 1 per centum of such duties; provided, that when the articles exported are made in part from domestic materials the imported materials, or the parts of the articles made from such materials, shall so appear in the completed articles, that the quantity or measure thereof may be ascertained," &c. Because of the fact that the statute relates only to imported materials "used in the manufacture" of articles the courts have been obliged to hold that where imported materials, though subjected to elaborate processes or treatment involving the expenditure of much labor, were not actually "manufactured," drawback could not be allowed. In the text as incorporated in the Philippine tariff it will be provided that where imported materials on which duties have been paid are used "in the manufacture or production of articles," &c., drawback may be allowed. Under the decision of the United States Supreme Court the term "production" will embrace many processes which cannot technically be regarded as manufactures.

The Ways and Means Committee is expected to act promptly upon the projected revision of the Philippine tariff, and the War Department hopes that the enabling act will be passed in time for the schedules to take effect about April 1. The full text of the original revision was forwarded to Manila some weeks ago, and the modifications have been sent by cable, so that the revised text is available for promulgation by the Philippine Commission as soon as approved by Congress. W. L. C.

The production of crude oil in California for 1904, as reported by the California Petroleum Miners' Association, was 28,423,860 barrels, which, it is claimed, places the State ahead of any other State in the union, and far ahead of all foreign countries except Russia.

The Wason Car Mfg. Company, Springfield, Mass., has received a contract from the New York, New Haven & Hartford Railroad for 60 passenger cars, 36 of them vestibuled.



## Canadian Developments.

### Dumping Regulations Amended.

TORONTO, January 21, 1905.—Protests from Chambers of Commerce in Great Britain against Canadian anti-dumping regulations which were found to be vexatious have had some effect. In response to them the Customs Department has issued a supplementary circular to exporters advising them that certain simplifications in the procedure of entering merchandise have been decided upon. The main change adopted is a consolidation of the several certificates which the regulations previously called for. A form of the single certificate into which the facts are to be compressed is given in the circular. This is to apply to invoices of goods sold by the exporter prior to shipment. The advantage of this amendment is that it minimizes somewhat the perplexity which was almost inseparable from the filling in of two or three certificates, which repeated one another at some points and appeared to contradict one another at others. Duplication is avoided as far as it can be consistently with clearness.

Exporters are also permitted to use their own bill-heads for invoice purposes, provided the last column be headed with the words "Selling price to the purchaser in Canada," and that the column next leftward be headed "Fair market value as sold for home consumption." These captions may be written, printed or stamped upon the invoice. On the invoices, too, must be placed the marks and numbers that the packages bear.

Further, contrary to a requirement prescribed in the regulations as they stood before, it is no longer necessary to deliver invoices to the carrier transporting the goods to Canada. Invoices are to be sent by mail—as the practice was before the antidumping duties were adopted—to the importer or agent for use in making entry of the goods at the port of customs destination in Canada. In all cases where the goods are sold prior to shipment, as distinct from consignments to agents, the certificates on the invoices are to be signed by the exporter.

Although invoices in duplicate are also required for the customs entry of free goods, collectors are authorized to accept invoices of free goods (wire rods excepted) without certificate thereon, but in such case the invoice must contain no items but those relating to free goods.

In further notice of the criticisms of the Liverpool and other British Chambers of Commerce the Dominion Government sent a dispatch to the British Colonial Office, the purpose being to bring about a better understanding on the subject of the antidumping duties and the regulations relating to them. It was pointed out that the British Chambers of Commerce take an erroneous view of the regulations, as, so far from being intended to hamper British trade with Canada, they were designed to assist the British manufacturer. The United States, it is maintained, is the principal country exporting goods to Canada which are sold at different prices at home and abroad. To check dumping on the part of one or two countries, however, it was necessary to adopt general provisions, as any appearance of discrimination might give offense.

In a letter which recently appeared in the Montreal *Herald* the writer, who signs himself "Independent," has this to say about the antidumping duties:

I have just returned from a visit to over 100 factories in the New England States. In fully 90 of them the matter of the dumping clause of the Canadian tariff was discussed and with one single exception the managers had not one word to say against the dumping regulations. All agreed that they would respect it; several claimed they had never made a dollar on any Canadian business, the importer exacting so close a figure it left no margin.

Now we read from the *Gazette* correspondence dated London, England, November 10, as follows:

"It is welcome news to British traders exporting to Canada that the Canadian Manufacturers' Association is moving to get the new dumping regulations withdrawn. There can be little doubt that it is doing no good and is calculated to do a good deal of mischief by exciting the anger or the derision of British traders. It is hardly conceivable that anything could have been invented that would do a greater disservice to Anglo-Canadian trade or create so much ill feeling on this side against the Canadian tariff system."

### Bounties and Ontario Ores.

In a recent letter to the *Toronto Mail and Empire* H. E. Knobel, Port Arthur, discusses Ontario's ore deposits and the reasons for the backwardness of their development. He expresses views very generally held in the mineral areas of New Ontario. He says:

Up to the present time exploratory work in New Ontario has shown up at least four fields within reasonable distance of Lake Superior which are awaiting development and from which ores of a desirable quality could be obtained.

The causes that have retarded the development of these fields have been twofold:

1. The exploratory work has been done almost entirely with American capital and by American engineers, and it is very much to their credit, but the severe standards set by those accustomed to work on the Mesaba and older ranges, both as to quantities and quality of ore, make them discredit propositions that do not absolutely fulfill the requirements which are customary on the other side.

2. With a tariff duty of 40 cents per ton, that the Americans impose on Canadian ores, the margin of profit is so reduced as to make the exploiting of mines for American furnaces an unattractive proposition.

On the other hand, the bounties granted by the Federal and Provincial Governments for the smelting of domestic ores should have had the effect of securing a preference in favor of such ores had it not been largely vitiated by the bounty that is also granted for the smelting of foreign ores.

A bounty on the smelting of foreign ores was right enough in its day, but if it can be demonstrated beyond a doubt—and those who are nearest in touch with the matter are convinced it can—that ores of the necessary quality exist in New Ontario sufficient for all the requirements of the Canadian furnaces, then the time has come when the bounty on foreign ores should be rescinded.

### Atikokan Iron Company.

Negotiations for the establishing of a blast furnace have been proceeding for some time between the Atikokan Iron Company and a citizens' committee of the town of Fort William. The result of their labors was laid before the Town Council and is briefly as follows:

A by-law is to be submitted to the electors for the purpose of approving of the following aid to the Atikokan Iron Company in conjunction with Mackenzie, Mann & Co., Limited—namely:

1. Thirty to 40 acres of land as a free gift for the works of the company, to be situated in the town of Fort William.
2. Exemption from taxation, except school taxation, for a period of 20 years.
3. Free right of way to the Canadian Northern Railway Company for a spur track to the land.
4. Purchase by the town of \$200,000 worth of the first mortgage 5 per cent. bonds, part of an issue of \$1,000,000 of bonds by the Atikokan Iron Company.

Such aid to be given on the following conditions:

1. Town to have one representative on the Board of Directors until the works are completed.
2. To pay for the bonds in instalments as the work progresses.
3. The head office of the company to be at Fort William.
4. The contract not to be entered into and the by-law not to be effective until arrangements have been made between the Atikokan Iron Company and Mackenzie, Mann & Co., Limited.

### Minor Notes.

An order for 7000 tons of steel rails for the Pèrre Marquette Railroad has been booked for the Sault rail mill.

Statistics to show the progress of Canadian manufactures since the census was taken in 1901 are being collected by the Census Commission.

The Steel Radiator Company, capital \$500,000, has been organized, with head office in Toronto.

C. A. C. J.

The foundry foremen of New York and vicinity have established an association known as the New York Branch of the Associated Foundry Foremen, holding regular monthly meetings. The next meeting will be held at Smith Hall, corner of Montgomery and Warren streets, Jersey City, N. J., January 28, at 8 p.m., at which papers by members will be read as follows: "What Disposition Can We Make of the Rattle Scrap?" by Wm. Sickels; "Are Pneumatic Tools a Success in Foundry Practice?" by President Thomas; "What is Your Experience in Using Steel in Cast Iron?" by Mr. Blankley; "How Do You Proceed to Get the Men to Use Up to Date Tools in the Foundry When They Are Opposed to Them?" by Mr. Hoffman. The president is Charles H. Thomas of New York City and the secretary-treasurer is Sidney M. Williams, Elizabeth, N. J.

## Mexican Trade Notes.

### Business in 1904.

DURANGO, January 11, 1905.—A review of Mexican business and industrial development during the year just closed can scarcely fail to awaken a feeling of satisfaction in the minds of all well wishers of the Republic, whether they be investors or aliens, who have made the country their adopted home. No untoward event has marred the steady progress of the nation. The activity in mining and other established industries which was visible at the opening of the year 1904 has continued unchecked. The iron and steel manufacturing plants in Durango, Monterey, Guadalajara, San Luis Potosi and other points have been kept employed to their utmost capacity. There have been very few business failures. Bounteous crops have awarded the labor of the agriculturists. The statements of the railway companies show increased earnings, both gross and net, particularly in the last half of the year. The improved position of the Mexican peso in the world's money markets, thanks to the initiation of legislation whose object is to permanently adjust its value, has been of special advantage to the transportation interests. This unsettled question has had the natural effect of decreasing the inward flow of foreign capital for investment, but notwithstanding this temporary drawback many capitalists, realizing that the currency problem would be wisely settled by the Diaz Administration at an early date, have not hesitated to take advantage of the great opportunities which Mexico offers for profitable investment.

### German Competition.

German manufacturers of hardware and certain classes of machinery continue to carry on an active campaign for Mexican trade. The claim is made by representatives of German manufacturers of hydraulic machinery that in the matter of supplying special types of turbines and other appliances for large electric power plants they are easily in advance of competitors in the United States. They point to the fact that their machinery has been installed in several of the great power plants erected in Mexico and that turbines of German make will also be used in plants now under construction. As the utilization of water power upon an extensive scale is only just beginning, and the demand for hydraulic machinery is likely to grow in the future, United States concerns engaged in this line of manufacture will do well to profit by the opportunity here offered for the exercise of their skill and ingenuity.

The tactics followed by German firms in the building up of trade in sales of tools and hardware is well illustrated by an incident which is related by an observer in one of the leading Mexican cities. He says:

Two years ago there came to the city a representative of a large German tool firm. In conference with the manager of one of the largest hardware houses of the city he made a note of the class of goods that was most in demand, and found that many of the articles could be obtained only in the United States. There was, for instance, a certain kind of a wrench of American manufacture which had proved a decided success and had driven the German wrenches designed for the same purpose out of the market. He bought one of these wrenches, along with several other articles of American manufacture, and sent it to his firm in Germany. A few days since he reappeared with a wrench exactly like the American invention and sold it almost 50 per cent. cheaper.

There may be a moral to this true story; it is not said that the article was a monkey wrench.

### Imports and Exports.

The foreign trade of Mexico continues to grow, and the United States fairly maintains its position as the leading buyer and seller. The following table shows the comparative value of free and dutiable goods imported into the Republic in the two last fiscal years:

Imports (Gold Value).			
Fiscal years.	Free goods.	Dutiable goods.	Totals.
1902-1903.....	\$17,336,287.07	\$58,568,520.51	\$75,904,807.58
1903-1904.....	15,420,693.86	62,940,077.20	78,360,771.06
Differences..	D \$1,915,593.21	I \$4,371,556.69	I \$2,455,963.48
D. Decrease. I. Increase.			

The decrease in the total of free goods is due to the

falling off in railway construction, material for that purpose not being subject to duty.

The growth of the mining industry and the increase in the production of copper and lead are attested by the following exhibit:

### Export of Mineral Products.

	Copper. Metric tons.	Lead. Metric tons.
1899-1900.....	28,266	63,481
1900-1901.....	33,351	84,959
1901-1902.....	61,864	98,422
1902-1903.....	62,132	98,971
1903-1904.....	80,286	94,030

### Railroad Construction and Concessions.

Railroad concessions have been granted recently as follows: To Gen. Agustin Pradillo to construct a line running from Zitacuaro in the State of Michoacan to Jaconusco in the State of Mexico. It is to be a narrow gauge road, and three years are allowed for the construction. To David Richardson for a standard gauge line from Guayamas to Tonicul in the Schuaripa district. Twenty km. of the line must be completed within two years, the time limit of the concession being six years. A company has been formed in Los Angeles, Cal., under the title of the Richardson Construction Company, capitalized at \$500,000, to carry out this undertaking.

Among railroad rumors perhaps worthy of repetition is one to the effect that A. E. Stilwell, president of the Kansas City, Mexico & Orient Railway Company, has acquired the concession obtained some time ago by Juan Ochoa Ramos, covering the construction of a number of lines in the State of Mexico and in the Federal district, and that the Mexican International Railway Company will soon commence construction work upon certain long projected extensions.

A company named the Ferrocarril Jalisco y Michoacan via Chapala and capitalized at \$1,500,000, has been organized to connect the city of Guadalajara with the famous resort, Lake Chapala, by an electric line. The officers are: President, Carlos Laguno del Hoyo; vice-president, William Vernon Backus; treasurer, José R. Corral; manager, Lic. J. N. Zermeño; secretary, Ignacio Caranza; auditor, José Lopez Portillo y Rojas. The company will also have various branches in the States of Jalisco and Michoacan.

### Industrial Notes.

The Monterey Iron & Steel Company has added new departments to its plant, according to a local journal, which says:

After being closed down for the annual overhauling and the Christmas holidays, the plant of the Monterey Iron & Steel Company will resume operations before the close of the week, and when it again turns on the power there will be many additional wheels to turn. Taking advantage of the annual lay off, new machinery has been installed. Recently two new departments have been added to the already immense plant. They are a plate mill and a wire mill. These new departments will cause an increase in the working force and open up a new field for the concern, which is rapidly becoming known not only in the Republic, but in the United States. The plant has sufficient orders to keep it running steadily for many months, and there is a rumor of a big order, which, if received, will give the plant an opportunity to show what it can do in competition with similar concerns in the States.

A concession for an electric lighting plant for the city of Culiacan, the capital of the State of Sinaloa, has been obtained by the Culiacan Electric Company, organized in San Francisco, Cal., with \$300,000 capital. The incorporators of the company are: I. Gutte, F. G. Braue, H. Hacke, H. Eichhoff and Sidney Sprout.

A new theater, which will cost \$5,000,000, is to be built in the capital. The contract for the steel frame has been given to an American firm.

The following figures show the remarkable growth of Mexico's foreign trade: The value of the imports in 1880 was \$7,866,493 and of the exports \$7,209,593; in 1904 the respective totals were \$45,900,718 and \$48,627,155. From January to October, 1904, Mexico imported 22,033 tons of steel rails from the United States, valued at \$563,557 gold. Referring to the pending order for 35,000 tons of steel rails to be placed by the Mexican Central Railway Company, a Mexico City journal has the following item: "It is now



said that the 35,000 tons of steel rails ordered by the Mexican Central Railway for delivery in 1905 cannot be furnished by the Tennessee Coal & Iron Company, which received the contract as mentioned at the time. That company has sold its capacity so far into the year 1905 that it could not guarantee delivery."

A company with the name "La Acujita" has been formed in the City of Mexico to develop coal lands near Sabinas, Coahuila. The company is capitalized at \$1,000,000. Several prominent capitalists and business men of the capital are stockholders.

A representative of the Monterey Iron & Steel Company is quoted as saying: "We are selling better steel just now considerably cheaper than any of the foreign houses, our drill steel, for example, selling for 32 cents per kilogram." He added that the demand for the domestic manufactured product is constantly increasing.

A water concession has been applied for by Manuel Alonzo, Vera Cruz, who desires to use 80,000 liters per second of the water of the Antigua River for motive power.

Congress has approved the plans of the Magdalena Lake Irrigation Company, which purposes using for irrigation and motive power in the State of Jalisco the waters of the lake named.

J. J. D.

## The Technical School and the University.\*

BY PROF. HENRY M. HOWE, COLUMBIA UNIVERSITY, NEW YORK.

Will technical schools serve the interests of the community better if they are parts of great universities or if they are isolated institutions? Is association or isolation more to the public good? Let us assume that the university in question deserves its name, having first a college or academic department and a department of pure science, and, second, other important departments, such as schools of law and medicine.

### Influence of Technical Teachers on Science Teachers.

First, let us consider the interaction of the teachers. The practice of the arts taught in technical schools, arts with a scientific basis, but still arts, is more nakedly for money making than that of the other professional arts. Medicine heals and raises, law protects the oppressed, dispenses both justice and wisdom from the bench; even as the servant of finance, it has to do rather with the protection and the transfer of wealth already existing than with the creation of new wealth, with the fruits of industry rather than with their growth. But the technical man is always occupied with questions of profit and cost, of money making for his employer, or of building as cheaply as his standard of quality will permit. The merit of every plan is measured in dollars, be it mining and smelting, manufacturing, transportation or agriculture. The subject must be taught from this standpoint. Our graduates must be efficient money makers; but it is still more important for the community that they should be liberal citizens.

Surely it is for the good of the community that the technical teachers should have the softening and broadening influence of contact and work with teachers of the humanities and of pure science, with men to whom the ever present money question is of secondary importance, to whom beauty is more and money less; for so will they in turn influence their students more broadly and humanly; so will their light be whiter and their precepts and example nobler.

Conversely, it is for the good of the public that the teachers of pure science, and more particularly those of the humanities, should in turn be broadened by contact with the teachers of the technical school. What I gain from another, be he broad or narrow, broadens me. It is in the direction of scholasticism or professorialism (I hardly find the right word) that the teachers of humanities and pure science as a class twist. This is unfortunate, because it turns them the farther from their students, whose

natural twist is in the opposite direction. In youth our god is Hercules; we are of hot blood and high spirits; we are openly material; we boast of being "arrivists." To us the professor is dry, snuffy, not of flesh and blood like ours; his interests are not ours. We are not in touch with him, though, unconsciously, we need his touch so deeply. Our football loving and rather brutal race especially must see to it that the refining and softening influences of these teachers on our youths is not weakened; for, clean and sterling as our qualities are, even they must have their seamy side.

Now, these teachers should have their twist toward scholasticism and away from their students lessened by contact with the technical teachers, especially if, as in the schools of law and medicine, these are in part chosen from the active practitioners; for these technical men are generally of broader and closer experience with men as distinguished from boys, with the mature as distinguished from the adolescent human being. They have striven with men in work in which they have been helped only indirectly by their education, in the great tasks which are before men in a field of human endeavor probably more normal than the scholastic one—that of winning wealth from nature, of first surpassing and then directing their fellows: more normal because man is by nature rather a governing, getting and having animal than a scholastic one. Even as professors they may remain in close contact with the great technical work of the day as consulting or practicing engineers, as directors of industrial companies, and in other ways.

Indeed no argument should be needed to show that every added class of teachers should add to the broadening effect of the environment and should thus make the attitude of each more just. Each class may indeed attack its problems in its own way, but the solution which one finds should aid others. The president brings to each faculty some of the experience of each of the others; the university council facilitates the comparison of different solutions of like problems. The professor of mathematics or of Greek may be the one to whom I appeal for light on my problems of molding embryo metallurgists.

### Interaction of Different Classes of Students.

Here a word as to the interaction of different classes of students: The serious technical student unexpectedly learns from his fellow of the college of the delights of this or that writer; of the existence of this or that school of philosophy; his interest in things beautiful is awakened; a chat with the student of architecture sets him thinking about the genesis and meaning of logical finished Doric and soaring spiritual Gothic. Each student from another department cries, *Audi alteram partem*. However good and healthy your interests may be, they are "only one group out of many." The technical student's horizon is broadened, and truly it needs broadening. According to my observation, narrowness is the chief defect of the isolated technical school.

Like students of the other learned professions, the technical students are as a class more earnest, more zealous, than their fellows of the college; they are more mature, and they see more clearly than the college student the bearing of their studies upon their life's work. These contagious qualities, zeal and earnestness, should by intercourse with the technical students be caught in some degree by those of the college students who are not thoroughly immune.

Happily, in human intercourse action and reaction need be neither equal nor opposite. The barbarian barbarizes neither colonist nor missionary. The stronger holds to his way, sometimes even the more steadfastly when the benefit of his example to others touches his humanity or his pride. And if the less earnest among the technical students suffer through having the example of the more earnest of their number offset by that of the college students, less earnest as a class, is not this the disadvantage which attends every bringing together of men, and may we not hold that the uplifting action of the stronger will in general far outweigh the down dragging action of the weaker? In the interaction of depraved men with well meaning boys the opposite might be true; but here we have not to do with the depraved

\* Extracts from a paper presented January 13 to the Association of American Universities, Baltimore.



and vicious. The technical student is stronger because more mature and because stirred by a stronger motive. If the college student lacks earnestness it is not because the motive away from it is strong, but because the motive toward it is weak. The upward influence, then, of the more mature and more strongly moved technical student should in general outweigh greatly the downward influence of the less mature college student lacking strong motive. Even here, then, the community as a whole should profit by the interaction of students. The college students gain in every respect, and the technical students should gain in breadth more than they lose through any down leveling of their earnestness, especially if the technical school at the time of association has already the momentum which size and established traditions give and if the influence of the college is diluted by that of allied professional schools, such as those of law and medicine.

But the matter may not be so simple under other conditions, as, for instance, if in creating a new technical school the choice should lie between isolation and association, not with a university, but with some long established college which has as yet no professional schools. Though this extreme case indeed does not fall within the question which I treat, the value of association with a great and true university, we may consider it because it illustrates an important principle which applies, though with much less force, to the question of association with universities of a character unfavorable to association.

Since in this case of a nascent technical school and a grown college the broadening effect of association is at its weakest, while the zeal chilling influence of the college students is at its strongest, this influence is likely to receive preponderating weight in the minds of those interested in the welfare rather of the projected technical school than of the general public. Such men, and it is in their hands that the decision may rest, would probably oppose association unless the traditions of the college itself made for earnestness and scholarship rather than fun and football. Though this untoward influence is not to be ignored, it should weigh but lightly against the advantages of association with a true university, unless the conditions are unusually adverse.

The counsel and learning of the professors of the school of pure science and of certain professors of the college should directly benefit the technical school associated with the university by helping to plan and to interpret the researches both of its teachers and of its advanced students. This widens the field of usefulness of the technical school. Its investigators go further and deeper and see more clearly. The better planned research is the better aimed artillery of science; we throw ourselves on the hinge, not on the solid wall. Wise interpretation of results houses the harvest; false interpretation rots it, making poison where food should be.

#### The Question of Economy.

As with men, so with instruments. Many of the more costly of these are needed imperatively but intermittently. The technical school readily lends hers to the associated school of pure science, and *vice versa*. So, too, with books. And here we reach the general question of economy. Nobody will deny that increase of scale permits greater economy in administration; even if the locomotive were no faster than the stage coach its economy would insure its use. Nor are we to fear that our present universities have reached the limit of economical human administration. The history of our great industrial and railroad combinations instructs us here. We do not here ask whether their vast scale has increased their benevolence or beneficence; for our immediate purpose their lesson is that the present university scale does not approach the limit of the economical and efficient.

A commander-in-chief to plan grand strategy, a commissary general to plan for food, a surgeon general to plan for health, division generals to interpret and apply, colonels to prepare details, captains to lead the charge, privates to give and take the shock. The ideal great university fully occupies each general and colonel with work on his own plane, so that his strength is not frittered away

on work fit for captains and subalterns. On the staff of the university are men differing widely not only in special acquirement but in capacity and judgment. The grand scale permits an approach to that ideal planning and division in which the energy of each worker is fully used in work for which he is fitted and in work fit for him. It enables us to give the investigator more fully to his investigations; to confine the popularizer of knowledge more fully to the immature students, and the deep thinker more fully to the advanced students. What here appeals to us chiefly is, not saving salaries, but better fitting work to worker, enabling each to give the world the most of his best, and, most of all, fully supplying the generals with generals' work, thus increasing the efficiency of the labor of some of the community's finest and best, and spreading wider the invaluable leavening of that little leaven.

You may ask, "Are not the undivided services of an eminent president more valuable to the isolated technical school than a fraction of the services of even the most illustrious university president?" Each such case must be judged on its merits. The simultaneous consumption and conservation of my cake is no part of my creed. If you dispense with your president and save his salary you cannot keep the equivalent of his full services. But why need you dispense with him? The president of a technical school should retain his efficiency, should, indeed, accomplish more, if remaining at the head of his school he leads it into association with some sister institution. The act of association need neither expel, enfeeble, nor obstruct him.

To sum up, wisely guided association, while it need neither deprive the technical school of character and individuality nor injure any of those in interest, should benefit the community, whose welfare here deserves our chief thought, through the broadening interaction of the teachers of pure science and of the college, representing scholarship and culture on one hand, and the technical teachers, with their closer contact with active life, on the other hand, through the interaction of the more earnest technical students and the more broadly studying college students—in a word, through the broader environment which the university offers, with diversity of life and interests, of teachers and students, of museums and galleries. For the adolescent this environment is to that of the isolated technical school as city life is to village life. Further, the teachers of the school of pure science and of the college should help the technical school in its investigations materially. Finally, the grand scale should effect great economy not so much in saving salaries and in widening the use of the more expensive instruments as in fitting work to worker, and, best of all, in more fully supplying the eminent with work on their own plane. Against these great advantages the zeal chilling influence of the college student upon his technical fellow should count for little under all usual conditions.

**The Selden Patent Case Against Automobile Builders.**—An announcement of great interest to the automobile trade and the buyers of machines generally is made by the Association of Licensed Automobile Manufacturers that the suits for infringement of the Selden patent pending against the Panhard & Lavassor Company, Paris, France, and A. Massenat of that firm, who represents it in New York, have been settled by the complete surrender of the defendants. This development brings into line as licensed machines the Panhard cars, along with the Mercedes cars. The present Mercedes agents adjusted their affairs some time ago by arranging to import through a licensee of the patent. The Panhard Company sought a settlement after carefully following the testimony taken in the main suit under the patent against an American manufacturer. The surrender was complete, an agreement being made for the entering of a decree and an injunction against the Panhard people, and also for the adjustment of back royalties as well as for the payment of royalties on future importations. It is announced that this settlement, however, will in no way interrupt or delay the vigorous prosecutions by the patent licensees of all other suits in progress.

Rails for Lines with Fast Trains.\*

BY P. H. DUDLEY.

(From Chapter V, which considers the manufacture and inspection of steel rails in American rolling mills.)

Steel.

Acid Bessemer steel is almost universally used for rails in the United States. Open hearth steel has been used in making rails for service tests, and it is said to have given results equal or superior to Bessemer steel in wearing qualities, but no details are obtainable.

After recarburizing the bath the metal is poured directly into the teeming ladle at all the mills in the United States, with the exception of the Illinois Steel Company's plant at South Chicago. At this works the metal is poured into an intermediate ladle. The advantages of this method are that the metal is mixed more uniformly than when poured directly into the teeming ladle, and the entire mass of metal is affected, the gas and slag being liberated much more effectively than when the ladle is stirred with a green wood pole. Any practice which contributes to a sound ingot is of first importance.

Ingots.

In mill practice great changes have been made in the last two decades to furnish the output of rails required. The converters for blowing the steel have been enlarged from 5 to 15 or 20 tons. Steel mills built in 1873 for an output of 60,000 tons per year (considered a large product at that time) have all been superseded by those which can turn out a greater number of tons per month. The size of the ingots has been increasing constantly in the past few years, a necessity for the tonnage required.

In the early manufacture of Bessemer steel rails, with small percentages of carbon and manganese, ingots with small blow holes were often produced, and when the surfaces were not oxidized they became welded partially or completely in the subsequent process of manufacture, especially when they were hammered by heavy steam hammers. With the higher grades of steel in use at the present time, and the more rapid methods of manufacture, the blow holes (sponginess) of the ingot are not welded, but become elongated in blooming and rolling, and when this is the case a weakness develops in the inside upper corner of the rail heads in service. The wheel pressures are now so great that after a wear of one, two or more years the metal becomes detached and flakes off the upper corners of the head of some rails. Instances are seen also where the unsound metal breaks out—"detrusion"—on the inside edges of the head and is rolled out into thin flakes by the wheels. The top rail from the ingot as a rule shows the flaking and "detrusion" more decidedly than the succeeding rails rolled from the same ingot, though in cases all except the butt rail are affected. It is not alone a question of the chemical composition of the metal for the rails, but the solidity of the metal and absence of porosity, slag and oxides of the bath retained in the corners and central portions of the ingot.

The universal practice of heating the ingots in modern rail mills is in vertical gas fired furnaces, which in a measure correspond to the soaking pits of a few years ago. At the Maryland Steel Company the furnaces admit only four ingots, and the air and gas supply is so controlled that the heater can heat only at a certain rate, and is not at liberty to control the amount of gas and air supply to the furnace at any given instant, which is regulated automatically by the mill superintendent.

Dimensions and Weight of Ingots.

	Name of steel company.					
	Carnegie.	Cambrla.	Lackawanna.	Maryland.	Pennsylvania.	Illinois.
Size on top, inches.....	15 x 17	16 x 19	16 x 16	18 x 19	16 x 16	16½ x 17 1/16
Size on base, inches.....	17½ x 19½	20 x 23	18 x 18	20 x 21	17 x 17	17¾ x 19¾
Length .....	5 to 6 ft.	6 ft. 2 in.	6 ft.	5 ft.	5 ft. 6 in.	6 ft.
Weight, in pounds.....	4,600 to 5,000	6,500 to 7,200	4,800 to 5,200	5,420 to 6,080	4,000	6,400
Number per heat.....	8	4	6	6 to 8	5 to 6	5 to 6

The ingots are all teemed in molds on cars, stripped by mechanical strippers and handled automatically, all of which contribute to the output. Pits have been discarded at all the rail mills in the United States. Since the introduction of the teeming of the ingots on cars the draft of the molds at some mills formerly in use for pit casting have been reduced so that their size on the top is now about 2 inches less than on the base for those 5½ or 6 feet long. This is advantageous, as the escaping gases are not entangled as readily in the columnar structure at their corners, and the top and the butt rail of the ingot are more uniform in quality. The metal cools most rapidly from the sides of the ingot mold, producing a decided columnar structure, 1 to 2 inches thick, at right angles to the sides. In the rectangular or square corners the columnar structure from the sides meet at an angle of 45 degrees, and escaping gases and impurities from the setting steel are often entangled, causing slight unsoundness or porosity of the metal near the corners of the ingots. As the metal cools in the mold it forces the impurities not entangled toward the fluid portion in the center of the ingot.

There are two or more grades of ingots which may be produced, depending upon the chemical composition. One sets solid, with a tendency to form a central pipe, in which there is an absence of the secondary zone of blow holes. The only gases sometimes retained are those mentioned as being checked in liberation. Other grades of ingots are those in which the steel rises after being teemed in the molds, and a secondary zone of blow holes is liable to be formed between the columnar and ordinary structure of the steel. A pipe rarely occurs in these grades, but the entire metal has considerable porosity.

The proper heating of the ingot produces a gradual equalizing of its interior heat and that supplied to its exterior portion in the furnace. The walls of the furnace are hot, and by a moderate supply of gas and air the heat equalizes through the mass as the interior portion solidifies. It requires from 35 to 45 minutes to equalize the heat in an ingot about 6 feet long, 20 x 22 inches on the base and 18 x 20 inches on the top. The heating is so gradual that the cinder does not drip from any portion of the ingot when it is drawn from the furnace to go to the blooming mill. The ingots are retained in a vertical position from the teeming until after equalizing the heat in the furnaces, being charged while the center is still molten, and by reasonable chemical composition and proper cropping of the blooms the percentage of piped rails is small compared with the rails rolled from ingots which were allowed to cool.

Rolling.

The rails at the majority of mills are rolled direct from the ingot. The Cambrla Steel Company, the Edgar Thomson mill of the Carnegie Steel Company and the Pennsylvania Steel Company at Steelton reheat the blooms. It is ideal, theoretically, to reheat the blooms to the refining temperature only of the steel for the final rolling of the rail, but reheating to the temperature of coarse structure, as is usually done, is injurious rather than beneficial. The direct rolled rails are the stiffest under the drop tests and have the highest elastic limits as a rule.

The speed of the finishing trains ranges from 480 to 600 feet per minute.

The number of passes in the rail mill at different plants is shown by the following table:

\* Abstract of report to be presented to the International Railway Congress, May, 1905.



Name of steel com- pany.	Number of passes.				Total No.
	Blooming train.	Rough- ing train.	Inter- mediate train.	Finish- ing train.	
Carnegie .....	9	5	5	1	20
Cambria .....	15	7	3	2	27
Lackawanna .....	6	4	5	1	16
Maryland .....	13	6	4	1	24
Pennsylvania .....	9	6	..	5	20
Illinois .....	9	3	2	4	18

Two of the steel mills use cooling tables, upon which four or six rails are held to cool, according to their weight, so that the finishing pass will be rolled at a reduced temperature to make the structure of the metal finer than was obtained before the modern practice of colder rolling was adopted. The cellular structure obtained by this practice differs essentially in character from the noncellular structure secured in the first light sections of Bessemer rails. Some of the cold rolled rails are irregularly cooled, retaining high initial strains, and fractures have occurred in the track, which have been traced directly to injuries due to the process as practiced. These can be overcome, doubtless, as experience is gained in such work, but it is not a simple problem. The recent short independent finishing trains for the final pass are two-high, but not reversible, and the finishing angles of the section can be made more perfect in the short rolls than in those having a number of passes. The Illinois Steel Company at Chicago and the Maryland Steel Company at Sparrows Point use chilled rolls for the short finishing trains, securing a smooth finish on the exterior of the section.

The shrinkage at the hot saws for the cold rolled rails is  $5\frac{1}{4}$  inches for the 80, 90 and 100 pound 33-foot rails at the Edgar Thomson Works of the Carnegie Steel Company. The larger sections are delayed a longer time to cool before the final pass. For ordinary rolling the shrinkage for a 33-foot 80-pound rail is  $6\frac{1}{2}$  to  $7\frac{1}{2}$  inches. The early 56-pound section for a 30-foot rail required a shrinkage only of  $4\frac{1}{4}$  to  $4\frac{3}{4}$  inches. At the new mill of the Lackawanna Steel Company at Buffalo the time from the first pass of the ingot to the hot saws is from six to seven minutes, as compared with about three and one-half minutes, rarely four, for 13 passes from the ingot to the finished section, with a smaller ingot, which was required in its former mill at Scranton, Pa., 10 years ago. The longer time taken in passing a single rail through the mill improves its quality, while passing two or more rails through the trains of rolls at the same time does not restrict the output.

#### Converting and Blooming.

The converting department must have close attention from the manufacturer, if not from the inspector, if the proper chemical composition and sound ingots are to be secured. It requires unusual skill on the part of an inspector to understand mill practice, and reliance must be placed largely on the reputation of the steel maker.

In blowing the bath in the converter it should be under rather than over blown to prevent reducing the manganese and silicon below the normal content intended for the steel. It is often claimed that with a low content of manganese or silicon the oxides are not always reduced and that they remain in portions of the steel as impurities. In some recent high carbon rails analysis of the resulting product did not indicate a trace of oxides with the slag which was determined as 0.11 per cent. There is often a large percentage of slag in the upper corners of the head and in the web of some rails, resulting in defects developing rapidly when the rails are put in the track. This is because the ingots from which the rails were rolled were not sound and homogeneous throughout.

Recarburizing the bath is an important step in the process of manufacture, since it insures a complete reaction and mixture of the spiegeleisen in the steel. Segregation of the metals and metalloids in cooling ingots results from imperfect mixing. The best specifications refer to the teeming of the ingots, and this feature should receive careful attention. Unsound ingots, which are rarely found in present practice, should be rejected wholly.

Equalizing or controlling the heat in the ingots is a requisite in the manufacture of good rails and is a ques-

tion of time instead of rapid firing, the firing being under intelligent control. This advanced practice results in an improvement in the quality of the steel and a reduction of the "seconds."

Blooming the ingots should be covered by the inspection, as the steel may be injured by too rapid and heavy passes in the blooming train before it is strong enough for the work. The structure of the metal in the hot ingot is frangible and requires time to flow without cracking on the exterior surfaces or the interior portions, the effects being noticeable in the service in the track of the rails from some mills. Ingots which are too hot crack in the columnar structure and do not weld in the subsequent passes. If these surface cracks do not roll out they form minute seams or flaws and, except in the heads or base, may be closed so completely as to escape inspection at the mills in the finished rail. The structure known as nongranular or noncellular is produced by attention to the reduction of the heat in the blooming before reaching the roughing and finishing train. A similar texture has not been found in the finished rails, in which attention is paid only to cooling the bar just previous to the last pass. The old light rails, which were considered to have such desirable qualities, were all bloomed from ingots at low temperatures by steam hammers, but were not reheated to as high a temperature as has been the general practice for the larger sections. In a blooming train with several passes and light reductions a rapid dissipation of the heat is effected, which is advantageous for the resulting product in the rails.

#### Drop Test.

The drop test in the manufacture of rails had almost become obsolete prior to the introduction of the heavier sections, and was reinstated in practice by the author in making up the specifications for the first high carbon rails. The mills in their general specifications provide only for one drop test from every fifth heat, which represents but one rail out of every 80 or 90 of the output. A drop test from each heat, provided the deflection and the elongation are noted, is sufficient to determine the physical properties of the rail and assists in the manufacture. When the drop tests are made promptly the conversion of the steel can be followed within a few hours, and slight corrections necessary to be made in the chemical composition, due to changes in the weather, are at once known. The drop test will detect instantly a reduction in the manganese in the steel due to the approach of a storm.

It is necessary to ascertain the toughness of the metal as a matter of safety. The American Railway Engineering and Maintenance of Way Association has recommended that a drop test be made from each heat as the least which should be accepted. Such tests can be made so quickly without any machine work on the rail butt that the physical properties of the steel can be ascertained almost at once without delaying or restricting the output. Other methods of testing do not furnish the same knowledge as promptly for application during manufacture as that furnished by the drop test. By stamping the flange with marks one inch apart before testing the elongation of the metal can be measured under definite stresses. The drop test compares in a measure to the severe shocks which the rail endures in service under fast trains. Steel of coarse texture will break under the drop test or in the track, and it indicates something abnormal in the composition of heating of the ingots or blooms when a break occurs.

J. P. Johnston, who resigned his position as Western sales manager of the Alphons Custodis Chimney Construction Company at Chicago, has become general sales manager for the Weber Steel Concrete Chimney Company, with headquarters at 159 La Salle street, Chicago.

T. L. Whittaker, secretary and manager of the sales department of the Crescent Forge & Shovel Company, Havana, Ill., has sold his stock and resigned his position. He will take a long promised vacation, having been identified with the agricultural steel shapes business 17 years.



### The Horse-Power Required for Machine Tools.

An article in the *Electric Club Journal* for January by J. M. Barr gives the following empirical formulæ for determining the size of electric motor required to drive various machine tools. The formulæ are based on standard American practice, with normal conditions of operation, using tools of water hardened steel run at a cutting speed of approximately 20 feet per minute. For a greater cutting speed the horse-power required should be increased approximately in proportion to the increase in speed.

For ordinary engine lathes horse-power =  $0.15 S$  — 1 horse-power.

For heavy engine lathes horse-power =  $0.234 S$  — 2 horse-power.

$S$  = swing of lathe in inches.

For boring mills 30-inch swing or over horse-power =  $0.25 S$  — 4 horse-power.

$S$  = swing of mill in inches.

For small boring mills the formula for heavy engine lathes is approximately correct.

For milling machines horse-power =  $0.3 W$ .

$W$  = distance between housings in inches.

For ordinary drill presses horse-power =  $0.06 S$ .

For heavy drill presses horse-power =  $0.1 S$ .

$S$  = capacity of drill in inches.

For slotters:

Stroke.—Inches.	Horse-power.
10.....	5
18.....	7
30.....	10

For shapers:

Stroke.—Inches.	Horse-power.
16.....	3
18.....	3½
24.....	5
30.....	6½

For ordinary planers horse-power =  $3 W$ .

For heavy forge planers horse-power =  $4.92 W$ .

$W$  = width between housings in feet.

**Peat in Sweden.**—The peat industry of Sweden is assuming proportions which promise to figure materially in the total of fuel consumption of the country. One company, which has adopted modern methods of treatment of the raw peat, is delivering the fuel at the rate of 5000 tons a year, though operations were begun on a commercial scale hardly 12 months ago. Of this amount some 3000 tons are taken by the State railways, and is giving much satisfaction, according to the report of the United States consul at Gothenburg. This peat gives only 2 per cent. of ash, and it is naturally much appreciated by stokers. The price is \$3.11 a ton, f.o.b. Landvetter, where the bogs are located. The Scandinavian Peninsula has vast peat bogs, and it is expected that the example set at the Landvetter bogs of the application of modern methods of production will result in a great increase in tonnage during the next decade. This is especially important in these countries, which mine little coal.

The Dodge Coal Storage Company, Nicetown, Philadelphia, has recently made further improvement in its conveying machinery as applied to the storage of anthracite coal, &c. This latest improvement is in the ribbon or bottom of the conveying flight. This ribbon has heretofore been made up of pieces of sheet steel about 12 feet long by 15 inches wide, from 12 to 15 lengths of these being electrically welded together to form the ribbon. By recent improvements in manufacture these ribbons are now made of one piece in lengths 201 feet long, 15½ inches wide and of varying thickness, having been successfully made of cold rolled steel. Such ribbons are now being applied to the company's conveyors, and it is claimed that the durability of the ribbon is greatly increased by the uniformity of material throughout its length, while the strain of expansion and contraction on the welded joints due to climatic conditions is entirely removed.

The crane men employed at the foundry of the American Steel Foundries, at Sharon, Pa., have received an advance of 5 per cent. in wages, and a threatened strike has been averted.

**The Consolidated Gas Company, New York.**—Some interesting data concerning current operations and on the progress made in the enormous plant building at Astoria, Long Island, N. Y., were given at the annual meeting, just held. We quote from the statement the following: "There was used during the past year of coke and coal 1,054,730 tons. Our mileage of main pipe was increased by 45 miles, and is now about 1807 miles. Our gas services number 184,943. The appliance department has sold or rented 33,569 stoves and ranges. There were expended for construction during the year about \$9,668,000 and for repairs about \$1,850,000. There were charged off for depreciation \$1,667,000, paid in taxes \$1,636,548, and on account of superannuation and employees' benefit fund \$32,500. The business of the company during the past year, as nearly as can be stated at this time, will probably show a surplus of \$2,600,000 above fixed charges and dividends. Undoubtedly you are particularly interested in the progress of the works at Astoria. One of our retort houses is finished and the second one will be ready for the roof within a few days. In the first retort house work has been done equivalent to the installation of half of the generating apparatus, while in one of the purifying houses the boxes are already installed and the connections are in place. The second purifying house is almost ready for the installation of the purifying boxes. The boiler house is finished and ready for service. The exhaustor house is nearly ready for the roof, and the four condenser houses either have the roofs on or are nearly ready for them, and they will be entirely closed in within a short time. All these buildings will then be ready for the machinery. One 15,000,000 cubic feet holder is in course of construction. The 60-inch main connecting the Ravenswood tunnel with the Astoria works is now completed within 1000 feet of the works, and two months' work will complete the construction. The new Waterside station, having a capacity at least equal to the present station—about 128,000 horse-power—is under way. This station will probably be ready for service in 1906."

The order for 350 locomotives recently placed with the Baldwin Locomotive Works, Philadelphia, by the Pennsylvania Railroad was for its H-6a design, which is a consolidation locomotive for freight service, containing four pairs of 56-inch driving wheels, 22 x 28 inch cylinders and Belpaire wide fire boxes. The total weight of each locomotive is 193,500 pounds, with 173,000 pounds' weight on drivers in working order. The weight of the tender when loaded is 143,000 pounds. The number of locomotives that will be built at the Altoona shops of the Pennsylvania Company has not been decided, as it will depend upon how largely the capacity of the shops is taken up with repair work.

At a test of the Brown 6-inch wire wound gun at the proving ground, Sandy Hook, the highest velocity attained was 2286 feet per second and the highest pressure was 43,000 pounds. Four rounds were fired, with charges of 48, 64, 66 and 68 pounds of smokeless powder. The gun is said to have worked very satisfactorily.

Commencing Friday, January 20, the secretaries of the several metal trades associations of the country met in New York and discussed general conditions. Nothing of importance developed at the session, which lasted for two days and terminated in a banquet Saturday night at the St. Dents Hotel.

George L. Rice, who has been manager of the Hamilton, Ontario, plant of the International Harvester Company since the inception of that branch three years ago, has been elected a director of the Northern Iron & Steel Company, Limited, Collingwood, Ontario, and will be located in Chicago in the interests of that company after February 1, resigning from the International Harvester Company's employ for that purpose. Prof. J. H. Stevenson, Nashville, Tenn. prominently identified with iron and coal industries in the South, was also elected on the directorate of the Northern Iron & Steel Company.

# THE IRON AGE

1855—1905.

New York, Thursday, January 26, 1905.

DAVID WILLIAMS COMPANY,	- - - - -	PUBLISHERS.
CHARLES KIRCHHOFF,	- - - - -	EDITOR.
GEO. W. COPE,	- - - - -	ASSOCIATE EDITOR.
RICHARD R. WILLIAMS,	- - - - -	HARDWARE EDITOR.

## The Rigid Protection of Trade-Marks.

The Bonyne trade-mark bill, the details of which have been presented in our Washington correspondence, makes strong provision for the protection of owners of trade-marks in cases of infringement, the changes from the existing law being very radical. Especially important as a deterring force to prevent infringement is the provision for the assessment of triple damages, which is new to the law of trade-marks, though existing in the patent and copyright laws. The bill, which has passed the House and is confidently expected to become a law without material amendment, will provide that "Whenever a verdict is rendered for the plaintiff the court may enter judgment therein for any amount above the amount found by the verdict as the actual damages, according to the circumstances of the case, not exceeding three times the amount of such verdict, together with the costs." The difficulty in proving exact damages in cases of this character is well understood, and has been taken advantage of. Under this new provision the court may take into account damages that have not been proved by the plaintiff to the action, but which apparently exist; or because of other circumstances of the case, make the additional verdict serve either as a measure of damages, or what to all intents and purposes would be a fine, with the plaintiff as the beneficiary.

Coupled with this provision is another that is as important in its way and in some cases probably more important. Under the existing law it is necessary for the complainant to prove sales and costs with entire and absolute accuracy, and this in the face of the fact that the only person having knowledge of the cost of making sales is the defendant or some one in his employ. The new law will require the defendant to produce evidence of the expenses he has been put to in making such sales as an offset to the sales proved by the plaintiff. In the language of the bill, "In assessing profits the plaintiff shall be required to prove defendant's sales only; defendant must prove all elements of cost which are claimed."

In yet another way the penalty is materially increased. Where a verdict has been found for the plaintiff or an injunction issued the court may order "that all labels, signs, prints, packages, wrappers or receptacles in the possession of the defendant, bearing the trade-mark of the plaintiff, shall be delivered up and destroyed." In this same connection is the provision that a registered trade-mark must be designated as such in trade by printing under the mark the fact that it is registered, as is required in the case of patents, so that any one who imitates or counterfeits will do so with due notice and should therefor be held strictly accountable for the fraud. All these protective measures are new and will tend to make wary those persons who would like to take advantage of another's mercantile good will as contained in a trade-mark.

Another feature of the proposed new law is the

change under which it will no longer be necessary for registration that a trade-mark shall have been used in foreign trade. Under the existing law this is necessary, and the result has been that foreigners, notably Germans and Japanese, have copied American trade-marks and registered them at home before the rightful owners have been able to protect themselves at Washington and through treaty provision with the foreign country. Under the proposed new law the American manufacturer will be protected before his goods come under the eyes of foreign competitors.

Apparently the bill is a good one and will afford much benefit to those who will make use of its provisions, including many hundreds of the owners of the 36,000 trade-marks that have been registered since the present law went into effect in 1881.

## Reciprocity and Tariff Revision.

Agitation in favor of reciprocity is being vigorously conducted in New England. The new Governor of the State of Massachusetts is an earnest supporter of the movement, made it a conspicuous feature of his campaign, and devoted a considerable part of his first official deliverance to an argument for the negotiation of more reciprocity treaties. This has given much encouragement to those who are working for this method of extending foreign markets, and the organizations which have been formed for the purpose are applying themselves strenuously to the task of securing further influential official co-operation at home as well as throughout the rest of the country. The undertaking would seem to be almost hopeless, in view of the backset which reciprocity has experienced. It had its day during President McKinley's administration. At that time the sentiment was so strong in support of commercial treaties that the Dingley tariff was framed for the special purpose of enabling them to be effected. Numerous duties were avowedly made higher than needed so that imposing but innocuous concessions might be granted in exchange for reductions in rates tendered by other countries, and provisions were enacted to enable such conventions to be made effective without further special legislation. These provisions have not been changed, and therefore in all respects the conditions are as favorable for making reciprocity treaties now as they were five or six years since. But unquestionably the interest of the country at large has relaxed. The treaties which were negotiated under the provisions of the Dingley act were not sufficiently attractive to secure the needed support, and although not actually rejected by the Senate, it was found impossible to accomplish their ratification and they simply fell to the ground. The truth is that other nations proved to be as wary as ourselves in looking after their interests and the concessions offered us were not of much consequence.

At the time these futile efforts at reciprocity were being made the pressure for such action was strong. A combination of influences operated very actively in its favor. All Europe had taken alarm at the deluge of American merchandise pouring into the markets of the world, and comprising not merely agricultural products, but all kinds of manufactured wares. A great deal was heard of the probability of concerted action by European Governments to check the invasion of their home markets. Russia seemed to be starting the movement when the Government of that country suddenly placed a practically prohibitory duty on American machinery in retaliation for an advance in our duty on Russian sugar. The fear of further action of this kind stimulated the



growth of reciprocity sentiment. Possibly if at that time it had been found that our export trade as a whole was diminishing and that some action seemed necessary to avert a greater decline, the objections to the treaties as negotiated would have been swept aside and they would have been ratified. But European expressions of dissatisfaction gradually became less intense, fading into practical nothingness when this country in 1902 suddenly developed such an amazing appetite for iron and steel as to devour its entire home product and eagerly seek more from every country capable of contributing to our relief. That was such a revelation of commercial possibilities, despite tariffs and the formation of colossal manufacturing corporations, that the world forgot its fears of America. The passing of European threats of hostile legislation lessened the pressure on our Government to negotiate treaties. Meanwhile, also, our exports of highly finished products have kept increasing, instead of diminishing, so that the past four years have proved to be the best in this respect in the history of the country. In fact, in some recent months the value of the manufactures exported has surpassed the value of our agricultural exports.

Despite this apparently satisfactory development in our foreign trade, it must be admitted that some uneasiness is felt as to the future. The Canadian market, which has long been of high importance for many of our manufacturing interests, and has steadily taken increasing quantities of our products, may not continue to do so. Partly to favor their own manufacturers, and partly to cultivate closer commercial relations with Great Britain, the Canadians are placing such restrictions on our trade with them that we may expect to find our exports to Canada diminishing. The New England reciprocity movement is largely directed toward the establishment of such relations with Canada that the Canadian market may not be lost. The purpose is commendable, but it is to be feared that even if the moribund interest in reciprocity treaties should be revived on this side of the border it will be difficult if not impossible to prevail upon Canada to reopen negotiations to that end. Conditions have greatly changed since the failure of the last attempt by Canada to establish such relations with us. Canadian manufacturing interests have grown in both number and importance, and the country is every year becoming more self reliant except in the new Northwest where the population is increasing most rapidly and turns to this country for much of its supplies. When the fact comes to be fully realized that no assistance to the promotion of export interests is to be expected through reciprocity treaties with Canada or any other country whose markets are of importance to us, the demand for a revision of the tariff on a lower level of duties will become even more insistent. The advocates of reciprocity treaties are usually but moderate protectionists or are outspoken in favor of revenue tariffs. The New England movement couples the necessity for cheaper raw materials with the desirability of wider foreign markets. It can therefore easily divert itself to supporting a demand for lower duties if nothing can be accomplished in the direction of reciprocity. That important manufacturing interests are already taking this view of the question is shown in the action of the Executive Committee of the National Machine Tool Builders' Association which has decided to take definite steps "to help in the passage of any measures providing for a revision or modification of the tariff, which may eventually lead to better trade conditions between this country and other, foreign countries, especially France, Russia and Canada, which have tariffs prejudicial to the importation of American machine tools."

### Tuberculosis in Factories.

Good hygienic conditions in manufacturing establishments are attracting more attention each year, not only from the philanthropic standpoint, but also as a factor in economical business management. The latest contribution on the subject is from the Massachusetts State Board of Health, which has made its report of an investigation conducted at the instance of the State legislature, on the sanitary condition of the factories and workshops of the Commonwealth. The investigation was not a thorough one because of the limited funds provided for its purpose, yet the report serves to bring again to the notice of the industrial community the evils and dangers which exist in some forms of employment, especially as regards the high rate of mortality and the low average age at death due to pulmonary consumption. The State Board does not by any means lay all the blame on the manufacturers, as is too often the case. Due weight is given the responsibility of unsanitary home conditions and personal carelessness of employees while at their work. To quote the report:

In all of the industries which properly are regarded as dangerous, the operatives themselves are commonly very largely to blame for the harmful results generally recognized, because of their disregard of proper hygienic precautions which can easily be observed. It is a notorious fact, for example, that workers exposed to dust are generally disinclined to use respirators designed to prevent its inhalation, and are averse to the use of hoods and fans which are set in place for its proper removal. If it happens that these devices interfere in any degree with the supply of light; and that those whose hands come in contact with poisonous substances, such as lead and lead compounds, are commonly prone to neglect the simple precaution of cleansing their hands before handling their noonday food. It is to be said, however, in justice to those who decline to use respirators, that most of these contrivances cause marked discomfort, becoming wet with the condensed aqueous vapors of the respired air, causing some difficulty in breathing and promoting local perspiration.

But the report does not let the employer off with a clean slate. An illustration of this is the result of the investigation of conditions in the grinding departments of cutlery and edge tool establishments: "In all of these (grinding) processes, even in the wet grinding, a large amount of exceedingly irritating mineral and metallic dust is given off and in properly equipped establishments provision is made for its speedy removal by means of hoods and exhaust fans or blowers. In five of the 15 establishments visited there was a proper equipment of fans and but little dust; in three, the hoods had been partly or wholly removed (presumably by employees) on account of interference with light; in one the fans were mostly without hoods, and the rest were inefficient; in three there were no fans whatever, and in the remainder there were fans that were only partly efficient. In one of the dry-grinding rooms a consumptive was employed, with no precaution whatever against possible contamination of the air by his dried expectorations." Referring to the presence of consumptives, even of those who do no indiscriminate spitting, the board says: "The inhalation of irritating dusts of various kinds leads to local changes in the mucous surfaces of the respiratory tract, and thus enables the specific germ to establish a foothold in the systems of those whose lowered vitality has made them susceptible to attack."

There is food for reflection, from an economic point of view, in the sentence that, "Some of the callings recognized as dangerous fail to attract the better element of the working classes, in spite of a high rate of wage, while others (industries) of the same class, conducted under proper hygienic supervision, may attract the same class in spite of a comparatively low wage rate." If this be true it is important as a matter of dollars and cents of profit. If high class workmen can be obtained at a rea-



sonable wage by providing the best of sanitary conditions, then it is a paying investment to provide such equipment, rather than pay high wages to an inferior class of men. It would seem to be a wise policy to enforce as far as possible the use of respirators, first selecting the best in the market and the one least liable to produce discomfort. As for the removal of hoods by employees, it is a practice that few shop managers would condone, because the employee who does this jeopardizes the health of his fellow workmen as well as his own. We are not inclined to believe that a manufacturer would knowingly retain a consumptive employee in this class of workroom.

France is having a new awakening along this same line of sanitary protection, and the government has just issued a decree applicable to the whole of the republic, making radical and wise hygienic improvement. The section referring to the dangerous classes of employment is interesting in this connection:

Work places shall be cleared of dust as well as of poisonous or disagreeable gas as it is produced. Funnels with whirling tops or any other efficient apparatus shall be provided for the escape of steam, gas and light dust. Dust arising from mill stones, threshing and crushing machines, and all other mechanical apparatus shall be carried off by means of drums communicating with a strong outward drawing current. For heavy gases, such as the vapor from mercury and carbon disulphide, ventilation shall be by means of an undercurrent, and tables and work apparatus shall be in direct communication with the ventilator. Pulverization of irritating and poisonous substances and similar operations, such as sifting and packing, shall be done by machinery in closed apparatus. The air of workshops shall be renewed so as to secure a healthful condition to workmen.

## The Trade-Mark Bill Progressing.

### Fair Prospect of Its Enactment by This Congress.

WASHINGTON, D. C., January 24, 1905.—The Bonyne Trade-Mark bill, in which it is believed are harmonized the views of the ablest experts on this important subject, has been passed by the House of Representatives by a unanimous vote, and the friends of the measure have good reason to hope that it will become a law at the present session. It is now before the Senate Committee on Patents, and manufacturers, dealers and patent experts in all parts of the country are addressing communications to Chairman Kittredge urging prompt action in view of the fact that Congress will finally adjourn on March 4.

#### The Bill Passes the House.

The passage of the bill in the House occurred under peculiar circumstances. A day had been set apart for the consideration of private pension bills, but the docket having been cleared at an unusually early hour an opportunity was afforded to take up other measures, and Mr. Bonyne, the author of the Trade-Mark bill, was quick to take advantage of it. It was necessary, however, that unanimous consent should be given, and some apprehension was created by a demand on the part of Representative Williams of Mississippi, the minority leader, for an explanation of the purpose of the bill. Mr. Bonyne proved equal to the emergency, and in a few words explained the chief provisions of the bill. His explanation was satisfactory to Mr. Williams, and there being no further objection the bill was passed without a dissenting vote.

#### Features of the Bill.

The provisions of the bill have already been described in this correspondence, except an important feature not completed until recently, which relates to the form of procedure in all litigation for the protection of registered marks. In several of the score or more of bills pending before the House committee when the Bonyne bill was drafted there were *quasi* criminal provisions for the punishment of infringement, but after careful consideration it was deemed inadvisable to embody such provisions in the bill, especially in view of the great difficulty of securing conviction under drastic enactments which call

for strict construction by the courts. It was therefore determined to limit the bill in this regard to civil actions for damages, and to prescribe a method for determining the amount to be recovered. Section 16 of the bill provides that the registration of a trade-mark shall be *prima facie* evidence of ownership, and that any person who shall imitate any such mark shall be liable to an action for damages therefor at the suit of the owner thereof, "and whenever in any such action a verdict is rendered for the plaintiff the court may enter judgment therein for any sum above the amount found by the verdict as the actual damages, according to the circumstances of the case, not exceeding three times the amount of such verdict, together with costs."

Section 17 clothes the Circuit and Territorial courts of the United States and the Supreme Court of the District of Columbia with original jurisdiction and the Circuit Courts of Appeal of the United States and the Court of Appeals of the District of Columbia with appellate jurisdiction of all suits at law or in equity respecting trade-marks registered in accordance with the provisions of this act, without regard to the amount in controversy. Writs of certiorari may be granted by the Supreme Court of the United States for the review of cases arising under this act in the same manner as provided for patent cases by the act creating the Circuit Court of Appeals.

#### Constitutionality of the Proposed Law.

Those most familiar with trade-mark legislation anticipate that the Senate committee will devote its chief attention to the question of the constitutional right of Congress to pass a law for the protection of trade-marks used in interstate commerce. Although many court decisions have been rendered upon various phases of the trade-mark laws past and present, the specific question of their constitutionality has never been ruled upon. In view of these facts, the attention of the Senate committee will be drawn by the friends of the bill to an interesting document recently extracted from the American State Papers embracing a report to the second Congress by Thomas Jefferson, which appears to be conclusive of the intention of the framers of the Constitution to provide for the protection of such trade-marks. This report, made by Jefferson as Secretary of State, was based upon a petition of the proprietors of a sail cloth manufactory in Boston praying for the exclusive privilege of using particular marks for designating their wares. He gave his opinion as follows:

It would contribute to fidelity in the execution of manufactures to secure to every manufactory an exclusive right to some mark on its wares proper to itself. That this should be done by general laws, extending equal right to every case to which the authority of the Legislature should be competent; that these cases are of divided jurisdiction, manufactures made and consumed within a State being subject to State legislation, while those which are exported to foreign nations, or to another State, or into the Indian Territory, are alone within the legislation of the general Government; that it will, therefore, be reasonable for the general Government to provide in this behalf by law for those cases of manufacture generally, and those only which relate to commerce with foreign nations, and among the several States, and with the Indian tribes; and that this may be done by permitting the owner of every manufactory to enter in the records of the court of the district wherein his manufactory is the name with which he chooses to mark or designate his wares, and rendering it penal in others to put the same mark to any other wares.

In view of the fact that less than six weeks of the present session of Congress now remain, manufacturers, dealers and others who desire the enactment of a comprehensive trade-mark law will do well to bring their views to the attention of the Senate committee. All communications should be addressed to the chairman of the committee, Hon. Alfred B. Kittredge, United States Senate, Washington, D. C.

W. L. C.

The second new large blast furnace of the Lackawanna Steel Company, at West Seneca, N. Y., was blown in last Friday. It is known as No. 4. The first of this group, No. 3, was disabled by an explosion some weeks since, but is expected to resume in about three weeks. The new plate mill made a record of 200 tons in one day last week, while the rail mill produced 1500 tons in 24 hours.

## OBITUARY.

GEORGE S. LEE, a well-known mining engineer, died January 13 in a hospital at Middletown, N. Y., as the result of a fall on the ice. Mr. Lee's home was at Hawthorne, N. J. He was 65 years old.

GEORGE C. HOWARD, proprietor of the Howard Machine Works, Lansdowne, Pa., died January 15 at an advanced age. Mr. Howard became a partner in the firm of W. H. Howard & Son in 1846, the enterprise having been started by his father, William H. Howard, a well-known inventor, in 1840. George C. Howard designed and invented a number of mechanical appliances and machines which are used extensively in factories in many lines of industry as well as in Government establishments, his firm supplying the greater part of the machinery used in the Bureau of Engraving and Printing at Washington.

STEPHEN A. GINNA, president of the Vulcan Detinning Company, Sewaren, N. J., and Streator, Ill., died January 15, at the Astor House, New York, from apoplexy, having been stricken on January 13 while at his office in the Wool Exchange Building. Mr. Ginna, who was a native of Maryland, was in his sixty-eighth year. He was a member of the New York Chamber of Commerce and formerly carried on a tin can making business in that city.

WILLIAM STANIAR, formerly a member of the firm of Staniar & Laffey, wire manufacturers, Harrison, N. J., died January 11 at his home in Belleville, N. J., from heart disease, aged 81 years.

NAHUM B. CHAMBERLAIN, superintendent of the B. F. Sturtevant Company, Hyde Park, Mass., died at Jamaica Plain on January 11, aged 63 years. He was a native of Mayfield, Maine, and entered the employ of the Sturtevant Company in 1859, two years after the business had been established by B. F. Sturtevant, his brother-in-law. Mr. Chamberlain served through the Civil War in the Twenty-fourth Massachusetts Regiment, and at the close of hostilities taught a colored school in Richmond, Va., for a short time. With the exception of this intermission his service with the Sturtevant Company was continuous for 46 years.

EDWARD ALBERT WALCOTT, of George D. Walcott & Son, manufacturers of machine tools, Jackson, Mich., died December 28.

JOSEPH A. HARRIS, a well-known manufacturer of gas meters in Philadelphia, died January 21, at his home in that city after an illness of a year, aged 66 years. Mr. Harris was born in Maryland of an old Pennsylvania family, one of his ancestors having been honored by the naming of the Pennsylvania capital, Harrisburg, after him. Joseph Harris went to Philadelphia shortly after the close of the Civil War, and engaged in the manufacture of gas meters.

JOHN KENNETH MACKENZIE, one of the best known mining engineers of the West and a member of the firm of Dickman, Mackenzie & Potter of Chicago, was killed last week by the Yaqui Indians, near Cobachi, State of Sonora, Mexico, where he had gone to examine mining properties on behalf of a Chicago syndicate. Mr. Mackenzie and four others of his party were killed during an attack on the stage coaches in which they were traveling. He was born in England, but was graduated in 1888 from the Sheffield Scientific School of Yale, after which he entered the employ of the Union Steel Company, Chicago, embarking in business with R. N. Dickman in 1891. He was 42 years of age.

FRANK CROKER, secretary and director of the Roebling Construction Company, New York City, died January 22 at Ormond, Fla., as the result of an automobile accident. Mr. Croker was 27 years old.

HUGH CASKEY, formerly a member of the H. & W. Caskey Brass & Iron Works, Newport News, Va., died on January 18 at his home in Philadelphia, aged 61 years. He was born in Philadelphia, and after serving an apprenticeship in a local brass foundry entered the United States navy as an engineer, serving through the Civil War. In 1884 he established a brass foundry in Philadelphia, and in 1892 went to Newport News, Va., where he

founded the H. & W. Caskey Brass & Iron Works, which was subsequently purchased by the Newport News Shipbuilding Company. Five years ago he retired from business.

WILLIAM H. SWIFT, founder and owner of the Boston Bolt Company, Boston, recently died, aged 59 years. He was a native of Williamsburg, N. J., and went to Boston at an early age. About 30 years ago he laid the foundation of the bolt business which has since grown to a considerable size. He leaves two daughters.

JOHN LINES, until recently superintendent of the manufacturing department of the Scovill Mfg. Company, Waterbury, Conn., died January 16, aged 72 years.

HAROLD P. STEVENS, purchasing agent of the Johns-Pratt Company, Hartford, Conn. died January 18, aged 23 years. Before entering the employ of the Johns-Pratt Company he was connected with the hardware house of H. H. Mayberry & Co., Birmingham, Ala.

JEAN L. PFAU, SR., former president of the Aetna Iron Works, manufacturers of architectural iron and builders of steel jail cells, Chicago, died January 8, in Los Angeles, Cal., aged 86 years. Mr. Pfau was a native of France and coming to this country settled at Quincy, Ill. The plant of the Aetna Iron Works, which company he had organized, was removed from Quincy to Chicago in 1886. He retired in 1890. A widow, two daughters and a son survive him.

## PERSONAL.

C. H. McCullough, Jr., second vice-president of the Illinois Steel Company and a vice-president of the United States Steel Corporation, has resigned from that connection to become assistant to E. A. S. Clarke, president of the Lackawanna Steel Company, with headquarters in New York City. Mr. McCullough was born in Philadelphia in 1868, and immediately after graduating from Stevens Institute in 1891 secured employment with the Illinois Steel Company. He later became foreman of the converter works at South Chicago, then night superintendent, and after several years was made superintendent of the plant. In May, 1903, he was elected second vice-president of the company.

Alva C. Smith, formerly superintendent of the Cleveland Furnace Company, Cleveland, Ohio, has resigned to take charge of the Riverside blast furnaces of the National Tube Company, Wheeling, W. Va.

A. J. Schied, manager of the Milwaukee branch of the Crucible Steel Company of America, has resigned that position to identify himself with the new Columbia Tool Steel Company, Chicago Heights, Ill., of which company he is one of the directors.

W. J. Olcott, general manager for the Oliver Iron Mining Company, has been elected vice-president and will hold both positions. L. W. Powell, formerly assistant to the president, has been appointed assistant general manager. Headquarters of both will remain at Duluth.

A. P. Green, formerly general sales manager, and J. Barlow Cullum, formerly second vice-president, of the Harbison-Walker Refractories Company, Pittsburgh, have resigned their positions and severed their connection with the company.

A. O. Blackburn has been appointed sales agent of the rail coal sales department of the Monongahela River Consolidated Coal & Company, Pittsburgh.

Henry D. Beach, for the past year president and manager of the Pacific Iron Works, Bridgeport, Conn., has resigned to become chief signal officer of the Western Division of the New York, New Haven & Hartford Railroad.

Randolph Bolling has resigned his position in the blast furnace department of the Bon Air Coal & Iron Company, Allens Creek, Tenn., to accept a similar position with the Embree Iron Company, Embreeville, Tenn.

Rear-Admiral George W. Melville will speak on "Epochs in Marine Engineering" on January 31 before the monthly reunion of the American Society of Mechanical Engineers at the society house, New York.



## Specialization in Manufacture.\*

BY ALEXANDER E. OUTERBRIDGE, JR., PHILADELPHIA.

The industrial structure may be compared to that of a tree. The organization of the industry corresponds to the roots, the common basis and development to the main stem and the special lines of manufacture which are from time to time added as the business grows correspond to the branches of the tree. Formerly it was the ambition of the manufacturer to add as many new branches as possible to the main stem, so that the plant might cover a larger field, and also because of the supposed advantage that in case of a temporary falling off in demand for products of one kind the establishment might be kept occupied continuously through a balancing demand for another product. Thus the manufacturer went on year by year, adding branch after branch to his business, until the concern, which may have started in a very small way, grew to great dimensions, spreading over many lines of industry. The catalogues of such establishments sometimes cover hundreds of pages and include a vast variety of implements or goods.

This plan undoubtedly possesses certain advantages, but it also had serious drawbacks. In the case, for example, of the manufacture of machine tools, where a great variety of machines, such as lathes, planers, &c., are made, of different sizes and shapes to suit the wants of many customers, the result is sometimes the accumulation of an enormous stock of costly patterns and fixtures, which are kept in storage for years, perhaps without duplicate orders therefor, and these are finally destroyed to make room for other similar but newer accumulations. When a single new machine is ordered it is customary to make duplicates of many of the parts. These duplicates are carried in stock for future use, sometimes for years, until, in fact, the design becomes obsolete, and then the patterns, fixtures and duplicate parts, which represent a large original investment of money and a continual expense for interest, storage, insurance, &c., are condemned to the scrap heap. Until this time arrives these patterns, castings, duplicate parts, &c., appear as "assets" on the books of the concern, often at a false value, for the annual allowance made for "depreciation" does not cover the ultimate loss due to obsolete fixtures and machines.

### Advantages of Specialization.

Partly as the result of experiences of this nature specialization in manufacturing has become a prominent feature in recent years, resulting in an astonishing decrease in cost and increase in production. Specialization in manufacture means that the manufacturer selects some article or product for which there is a heavy or a constant demand, and through devoting his entire capital, energy and ability to its development and the betterment of the methods or appliances of its manufacture so reduces his costs on it as to be in at least partial control of the trade. A few illustrations, taken from actual experience, of the advantage of quantity manufacture and undivided attention will be in point:

1. To show the difference in cost where the same machinery and appliances are used, but the quantity is increased. In making two oil pumps for hammer cylinders, the cost is \$20.19 each; the same pumps in lots of 12 cost \$6.12 each, a reduction of 69 per cent., due largely to the increased quantity, and this reduction could be substantially increased if the quantity should be further increased.

2. To show the difference in cost where different machinery or improved processes are used. For making 100  $\frac{3}{4}$  x 4 inch hexagonal head finished bolts, on a modern turret lathe, by reducing the body of the bolt from a commercial bar of hexagonal steel of a size required for the head, the cost is \$15.84. Similar bolts are now made by a machine screw company by welding electrically the head (cut from a bar of hexagonal steel) to the body of the bolt, made from a piece of cold rolled steel the exact diameter of the bolt, and sold for \$5.88, which shows a

saving in favor of this process of approximately 63 per cent.

3. Where an entirely new process is used. The instance taken is that of the manufacture of cores for molds, where the specialization developed a new process or made it advantageous to apply it. Certain cores which formerly cost \$1.18 each now cost 30 cents each. Others which formerly cost 56 cents each now cost 14 cents each; others which formerly cost \$6 each now cost 90 cents each, and so on.

The same principles apply in all lines of manufacture, and it has been found that reduction in cost of production, due to specialization in manufacture, is naturally followed by increased demand, for the simple reason that each successive reduction brings a new class of consumers or purchasers into the market, and a commodity which was regarded as a luxury of the few when the cost was relatively high becomes a necessity of the many when the cost is reduced to a sufficiently low level. When the cost has descended to the point which is necessary to establish this condition the demand for the commodity becomes permanent, subject to occasional temporary fluctuations following variations in the general prosperity of a community or the passing of the fad if it be one.

There are, of course, dangers of overproduction in this modern system of specialization, of which we have had many evidences of late, but it seems to be pretty well recognized that the secret of success in manufacturing lies largely in concentration of effort, in developing the plant to the highest degree, so that a superior product may be turned out at a minimum cost.

This implies a complete modern equipment of machinery and modern methods of management. Formerly old tools were venerated; now they are ruthlessly cast away as soon as superior machines can be obtained.

### Dangers of Specialization.

It may be stated as a general proposition that if a new machine be invented which will, by increasing the output only 10 per cent., reduce the cost an equal amount it pays to scrap the old machine. In many instances improvements have been made which have reduced the cost of manufacture over 50 per cent., and herein lies also one of the dangers of specialization in manufacture.

An establishment may have its capital tied up in a complete outfit of machinery designed to produce one article at the lowest cost, for which there may be a constant demand at a remunerative price. Then an ingenious inventor may design a new machine, or devise a new method of manufacture, which will perhaps produce better goods at far lower cost, and the utility of the old plant is at once destroyed. Its costly machinery may be of little or no value for any other purpose, and so a hitherto profitable industry may be wiped out of existence at one fell stroke. This is not an imaginary statement, but it can be supported by numerous facts.

A few years ago a new method of treating steel for cutting tools was devised, which enabled the tools to cut steel and iron four or five times as rapidly as could be done with any steel tools made up to that time. Shop rights were sold at large figures, and furnaces and other necessary appliances installed in several establishments for treating cutting tools according to this process. In a very short time new alloys were discovered, of which cutting tools are now made, having the same capacity without this costly treatment, and so the value of the process has been largely effaced.

The standardization of parts, now so general, is at once a cause and a result of specialization in manufacture. While some large manufacturers make most of their parts in their own factory, few make all, and a large proportion buy many and some buy practically all. Many makers of parts confine their manufacture to a single one. The more recent the development of a mechanical invention the more this practice seems to be adopted.

### Fundamental Principles of American Methods.

Certain fundamental principles characterize American methods of manufacture, such as the employment of special machines to perform specific operations only,

\* From the January number of the *Annals of the American Academy of Political and Social Science*, Philadelphia.



whereby the output of a factory is enormously increased, minute and systematized division of labor effected, the costly work of finishing and adjusting minimized, and the highest development of skill, accuracy and dispatch acquired. The high wages paid to skilled labor in this country have acted as a stimulus to the invention and perfecting of labor saving machinery, and the employment of such labor saving machinery operated by high priced, intelligent mechanics has resulted sometimes in a very much larger output and lower cost of product per man employed than anywhere in the world under old conditions.

In all lines of manufacture in the United States the same tendency toward specialization is apparent, and it is a question for serious consideration whether this process may not be carried too far, resulting in the future in a variety of unlooked for evils. Not the least of these perhaps is the decline of the "all-round skilled mechanic." Young men who enter our shops to-day find employment in tending special machines, and soon become highly trained in their operation, so that they earn large wages, consequent of course upon their ability to turn out by the aid of these machines the maximum amount of work with minimum of defects. They are encouraged by their employers to continue at one job and feel little ambition to change to another class of work or to another kind of machine, where their experience avails but little. Thus we have skilled planer hands, who know nothing about the operation of lathes, milling machines or other mechanical appliances in the same shops.

The Baldwin Locomotive Works, the largest of the kind in the world, and the most highly developed in specialization of manufacture, has already experienced the difficulty of finding young men competent to take the place of older hands, and has shown wise forethought in establishing a new school of apprentices, with a general superintendent in charge and a staff of supervisors or foremen of apprentices. There are at present three classes of apprentices, numbering in all between 400 and 500 in the works. The apprentices are not kept for an indefinite time in any one department, but are moved from one to another as they advance in experience, so that when they have served their full terms they graduate not as skilled "planer hands" or "lathe operators" merely, but as skilled mechanics. Furthermore, this system develops a feeling of proper ambition in the young man and of attachment to his *alma mater*. This is, in effect, an industrial college for the poor boy, worthy of emulation by other manufacturing establishments; the mutual benefit to employer and employee will be felt in the years to come and will continue to increase in value to all concerned.

The tendency toward specialization is not confined to manufactures. In the foregoing the attempt has been made to tell of and to illustrate its influence and effects in this line. The tendency seems to extend to engineering, medicine and the other professions, indeed to pervade every field of human endeavor. It is an evolution amounting to revolution of methods of doing the world's work.

Crescent Lodge of the Amalgamated Association at Wheeling, W. Va., composed of employees of the tin plate plant of the Whitaker-Glessner Company, held a meeting on Tuesday night and voted to remove the limit of output in the tin plate plant of that company. It is understood that this action was taken to permit the company to compete in the open market with tin plate mills in which the limit of output as set forth in the Amalgamated scale is not observed. If the limit had not been removed the plant would probably have been operated nonunion.

The Pressed Steel Car Company, Pittsburgh, has voluntarily increased wages 10 per cent. in all departments of its plant at McKees Rocks. C. Bowker, formerly acting superintendent of this plant, has resigned and has been succeeded by H. M. Quinn, formerly master mechanic. Mr. Quinn has been succeeded by O. E. Hall, formerly assistant master mechanic.

### National Metal Trades Association Notes.

CINCINNATI, OHIO, January 23, 1905.—J. W. Leigh, secretary of the St. Louis Metal Trades Association, reports that the calls for help filed with his employment bureau were all placed with the exception of pattern makers. This would indicate that the demand for help at this point was lighter than it was during the preceding week.

J. W. Hastings, secretary of the Worcester Labor Bureau, reports that his bureau is receiving numerous calls for help from points outside of the city.

The Milwaukee *Sentinel*, under date of January 19, claims that Stuart Reid Lodge of the Machinists' International Union will hold a meeting to take a strike vote. It is claimed that the probabilities are that a strike will be called, since assistance from the superior body has been promised if needed. It is rumored that orders have been issued from the machinists' headquarters and that there is a likelihood of strikes being called in 60 different shops at various points.

H. G. Frech, assistant secretary of the Cincinnati Metal Trades Association, claims to have placed 106 men during the last week.

The Toronto (Can.) *Daily Star*, under the caption of "A Missionary," tells its readers of Commissioner Eagan's address at the meeting of the Employers' Association of that city. Mr. Eagan will speak to the Philadelphia Metal Manufacturers' Association on the evening of January 23 and to the Buffalo Metal Trade Association on the 30th. He is in the meantime doing some missionary work in Boston and Providence.

Judging from the number of topics that are being mailed Secretary Wuest, the educational feature of the convention that meets in Chicago on March 23 and 24 will make attendance at this meeting desirable.

The secretaries of the various local employers' associations operating labor bureaus are, as never before, calling the attention of their members to the desirability of taking membership in the National Metal Trades Association.

The Studebaker Brothers Mfg. Company, South Bend, Ind., has built a plant covering 10 acres of ground, which is claimed to be the largest in the world for the manufacture of cast and steel wagon skeins. It has access by switch tracks to five railroad lines, thus affording unequaled shipping facilities. The buildings are of brick and steel construction. The foundry is equipped with tracks and cranes for the quick handling of melted iron, and contains a new equipment of machinery and appliances. This plant is located half a mile away from the vehicle works of the company and is operated entirely separate from those works. The machinery and appliances are adapted for turning out skeins of special taper for wagon manufacturers and insure uniform and superior goods of the easiest running qualities and the greatest durability.

A Berlin cablegram states that indications are observed that the end of the great German coal miners' strike is nearly at hand. The chances of success of the men are largely enhanced by the attitude of the Government, which has withdrawn moral support from the mine owners owing to their determination to refuse mediation. The Haniel group of mines, employing 2000 men, has granted the demand of the strikers, and the men have returned to work.

The Treasury Department has directed that on the exportation of disk plows of various styles and sizes manufactured by the Benicia Iron Works, Benicia, Cal., in part from imported pig iron, round and flat steel and round iron, the usual allowance of drawback may be made.

A labor convention has been called for June 27 at Chicago in which an effort will be made to form a strongly centralized national union of labor organizations. The call is signed by national presidents of the greatest and most powerful unions among American workingmen.

## Iron and Industrial Stocks.

NEW YORK, January 25, 1905.

The market was quite strong during the greater part of the week, with some stocks making new high records. American Steel Foundries preferred sold up to 65 on Friday of last week. Locomotive common on the same day touched 35½. United States Steel stocks also were strong, the common selling up to 30¼ and the preferred to 94¼. Sympathetically with railroad stocks the industrial stocks were affected at the opening of this week by the apprehension of international financial disturbances following the serious outbreak in Russia. Recessions occurred of \$1 to \$3 per share. Last prices on active industrial stocks up to 1.30 p.m. to-day were as follows: Can common 9¼, preferred 60½; Car & Foundry common 31½, preferred 91¼; Locomotive common 33¾, preferred 104¾; Steel Foundries common 14, preferred 62; Colorado Fuel 44; Pressed Steel common 35, preferred 88; Railway Spring common 33, preferred 94½; Republic common 15¾, preferred 68¾; Sloss-Sheffield common 61, preferred 102; Tennessee Coal 68; United States Steel common 28¾, preferred 92, new 5's 93.

**Dividends.**—The Jefferson & Clearfield Coal & Iron Company has declared a semiannual dividend of 2½ per cent. on the preferred stock.

Cambria Steel Company has declared a quarterly dividend of 1½ per cent., payable February 5.

The regular quarterly dividend of 1½ per cent. on the preferred stock of the International Steam Pump Company will be paid February 1.

Westinghouse Brake Company, Limited, London, England, has paid a dividend at the rate of 20 per cent. per annum for the six months ended December 31, 1904, together with bonus of 5 per cent.

**The Shipbuilding Reorganization.**—Sullivan & Cromwell, counsel for the United States Shipbuilding Company Reorganization Committee, announce that the new Bethlehem Steel Corporation, which was incorporated some weeks ago, has been organized by the election of the following directors: Charles M. Schwab, chairman; George R. Sheldon, Thomas F. Ryan, Pliny Fisk, John E. Borne, C. W. Wetmore, Oliver Wren, Archibald Johnston and Edward M. McIlvain. At a meeting Thursday the following officers were elected: President, Charles M. Schwab; vice-president, Edward M. McIlvain; treasurer, Henry S. Snyder; assistant treasurer, John A. McGregor; controller, B. H. Jones. The company is now in possession of all of the properties and equipped to continue the business. The new securities will be issued and ready for delivery within a few days. Formal notice to this effect will hereafter appear.

## NEWS OF THE WORKS.

### Iron and Steel.

As yet the two blast furnaces and open hearth steel plant at the Donora works of the Carnegie Steel Company, Donora, Pa., have not been started, but it is expected that one or possibly both blast furnaces will be put in operation about February 1.

J. T. Jackson & Co., Philadelphia, Pa., have sold the Liberty and Columbia iron furnace property, near Edinburg, Va., consisting of a modern blast furnace, 18,000 acres of ore and timber lands and 14 miles of railroad. The purchasers are ex-Governor W. R. Merriam of Washington, D. C., and some New York capitalists. It is their intention to develop the large ore bodies, increase capacity of furnace, and go into blast as early as possible.

The annual meeting of the stockholders of the Brier Hill Iron & Coal Company, Youngstown, Ohio, was held last week, at which the following Board of Directors was elected: George Tod, Henry Tod, William Tod, J. G. Butler, Jr., and H. H. Stambaugh. The directors organized by electing George Tod, president; Henry Tod, vice-president; H. H. Stambaugh, secretary and treasurer, and J. G. Butler, Jr., general manager. This company operates Grace Furnace at Youngstown, Ohio, having a daily capacity of about 350 tons of iron.

The Flagler Iron & Steel Company, Chicago, instead of buying only 200 acres of land in Lake County, Ill., now states that it has options on about 3000 acres and will itself negotiate for the location of other industries in the neighborhood of its own proposed works.

The Durham Iron Company blew in its furnace at Riegelsville, Pa., January 12. The furnace has been repaired in the last year and a general overhauling given. Edwin Thomas is general manager and John Thomas superintendent.

Notices have been posted at the plant of the Hollidaysburg Iron & Nail Company, at Hollidaysburg, Pa., that operations will be resumed in a short time. This plant contains puddling and

heating furnaces and four trains of finishing rolls, also 27 cut nail machines, the product being merchant bars, skelp and hoop iron, light rails and cut nails and spikes, the annual capacity being 12,000 tons of bar iron and other shapes and 60,000 kegs of nails and spikes.

The York rolling mill of the Susquehanna Iron & Steel Company, at York, Pa., is being overhauled and repaired. Considerable work is being done, but no time has been set for resumption of operations.

Harry W. Coffin has been appointed receiver for the Eclipse Rolling Mill & Mfg. Company, East Birmingham, Ala. It is understood that operations will continue at the plant under the receiver until the company's affairs are straightened out.

The creditors of the Diamond State Steel Company, Wilmington, Del., have appointed the following committee to devise ways and means to rehabilitate the company: Lewis C. Madeira, Joseph G. Hittner, L. Page, John J. Calne, H. Hoffer and Eugene Shirlith.

### General Machinery.

While a great deal of new machinery may not be required, it is probable that there will be some few tools needed by the Benjamin F. Shaw Company, Wilmington, Del., which has purchased property to which it intends to move its boiler shops, machine shops and pipe cutting and pipe bending shops. The company will continue to operate its present shops at Third and Orange streets, using them exclusively for copper-smithing, sheet metal work, light pipe work and for its growing supply business. The new shops are made necessary by increased business, the company's facilities not being sufficient to supply the demand for its products.

The International Machine & Screw Company, Springfield, Mass., has been organized with a capital stock of \$500,000 to manufacture machine screws with a new machine, the invention of George T. Warwick, who is vice-president and general manager. It is probable that the company will also build the machines. Theodore W. Leete is president and treasurer.

The Northern Engineering Works, crane manufacturer, Detroit, Mich., reports among recent shipments and installations of electric and hand power cranes: Union Electric Company, Dubuque, Iowa, one 15-ton; American Production Company, one 10-ton; Detroit Edison Company, Delray, Mich., one 30-ton alternating electric traveling crane; Edison Illuminating Company, one 7½-ton; Union Brass & Foundry Company, Lowell; Kenton Marble Company, Kenton, Ohio, one 8-ton traveling crane. The company reports an increased demand for its cranes and electric hoists, with an excellent outlook. The Thatcher Furnace Company, Newark, N. J., has been adding to its foundry equipment and has installed a 16-ton Newton patent cupola, made by the Northern Engineering Works.

The Smith & Winchester Company, South Windham, Conn., has been incorporated under Connecticut laws, and will consolidate the business of the old Smith & Winchester Company and that of the Frank A. Jones Company. The Smith & Winchester plant has been leased. It is expected that the business of manufacturing laundry and paper machinery will be considerably increased.

The National Machine Works, Chicago, announces that it will endeavor to rebuild its shop and resume business just as soon as circumstances will permit. The company's plant was recently destroyed by fire, causing a loss of about \$70,000.

The Kewanee Mining & Mfg. Company, Kewanee, Ill., writes that it will probably rebuild its plant, recently destroyed by fire.

Having installed additional equipment, the W. H. Hibbard Mfg. Company, 79-81 Washington street, Brooklyn, N. Y., is enabled to make prompt shipment of its presses, dies and special machinery. The company, which dates from 1875, reports a most gratifying demand for its products.

Fitchburg Machine Works, Fitchburg, Mass., has recently elected the following officers: G. F. Morse, president; H. F. Allen, treasurer; George S. Richardson, superintendent. The factory is reported busy on lathes and shapers.

Geo. A. McKeel & Co., Limited, Jackson, Mich., have been awarded the contract to equip the Lee Paper Mill at Vicksburg, Mich., complete with roller bearings. This plant is claimed to be one of the largest and most up to date paper mills in America. These roller bearings are gaining a wide reputation as large savers in the economical use of power.

The Ferracute Machine Company, Bridgeton, N. J., has moved the last of its machinery from the temporary plant into its new buildings.

At the recent annual meeting of Marion Steam Shovel Company, Marion, Ohio, Geo. W. King was elected president and general manager; F. A. Huber, vice-president and treasurer; A. E. Cheney, secretary and sales manager, and B. P. Sweeney, superintendent. The results of the past year's business were reported as satisfactory.

The Cheswick Mfg. Company, manufacturer of iron and steel specialties, whose plant at Cheswick, Pa., was destroyed by fire several months ago, has bought the buildings of the Structural Steel Car Company at Canton, Ohio. It is the inten-



tion of the Cheswick Mfg. Company to begin operations at Canton about April 1 next. The list of machine tools which the company required was printed in *The Iron Age* a month or so ago.

The Peteler Portable Railway Mfg. Company, Minneapolis, Minn., has consolidated with the Kilgore Machine Company of the same city, the new firm being known as the Kilgore-Peteler Company. Francis Peteler, the founder of the first named company and the Nestor of the dump car business which he established in 1870, retires from business at an advanced age. Philip Peteler and Charles B. Peteler will continue the new company, whose officers are: Chas. S. Hale, president; Geo. W. Bestor, vice-president; Frank C. Bestor, secretary and treasurer; Philip Peteler, superintendent. The new company will conduct both the dump car business of the Peteler Company and the manufacture of steam shovels, excavators, ditchers, timber and saw mill machinery made by the Kilgore Machine Company.

#### Power Plant Equipment.

The Keniston Engineering Company, 42 and 54 Washington street, North, Boston, has been incorporated under Massachusetts laws, with \$5000 capital stock. Fred. A. Keniston is president and treasurer, Fred. B. Hunneman is clerk, and the two with Thomas L. Willes constitute the Board of Directors. The business has been established for ten years, and is that of consulting and constructing engineering, with electrical and steam construction as a specialty.

The S. Morgan Smith Company, York, Pa., has received a contract from the J. G. White & Co., New York, for three McCormick turbines of 770 horse-power each, for the new Chittenden Power Company's plant near Rutland, Vt. The turbines are to be attached to General Electric generators.

The Flitz Water Wheel Company, Hanover, Pa., reports having considerable demand for its I-X-L steel overshot water wheel pumping plants and feed mills from South Africa.

The American Gasoline Motor Company has been organized at Baldwinville, N. Y., for the manufacture of gasoline engines, both marine and stationary. The company will secure manufacturing space in the building occupied by the American Knife Company until later, when it is the intention to erect a building to meet its requirements. A large number of orders for spring delivery have already been booked, and it is expected to have engines on the market by March, as the patterns are all completed. The company is composed of W. F. Marvin and A. J. Tooley of Baldwinville, who control the American Knife Company, and Florian J. Mantel and Emery P. Van Epps, formerly of Syracuse, both of whom have had a long experience in the construction of gasoline engines.

The Madison Gas & Electric Company, Madison, Wis., recently installed a 400-kw. Westinghouse turbine at its gas engine station.

Johnston Brothers, Ferrysburg, Mich., are building 14 boilers for the steam shovels to be used in digging the canal across the Isthmus of Panama.

George P. Webster, Columbia, Tenn., is one of a company which will erect a 50,000-bushel elevator, a 100-barrel flour mill and a 500-bushel corn mill. The company is in the market for a 75 horse-power Corliss engine.

The city of Oconomowoc, Wis., closed bids January 9 for a 12 x 12 inch Ames engine and a 60-kw. Fort Wayne dynamo.

The city of Campbellford, Ont., proposes building a new concrete dam and power house and installing two generators of 750 kw. each, direct connected to two horizontal water wheels, 200 revolutions per minute, head 25 to 27 feet. The dam is to be about 1900 feet long and from 8 to 27 feet high. W. J. Dorse is chairman and F. J. Smith secretary of the water works and electric light commission.

The Myrick Machine Company, Olean, N. Y., is going into electrical construction work and has now several contracts on hand. The company will also continue the manufacture of its Eclipse gas engine, which is built in the double cylinder type.

#### Foundries.

The Kuhn Foundry Company has been incorporated at Buffalo, N. Y., with a capital stock of \$15,000, to do a general foundry business in gray iron castings, and has purchased and fitted up the premises formerly occupied by the Buffalo Foundry Company prior to the erection of that company's new plant. The new company has purchased the business and equipment of the Niagara Falls Foundry Company and moved same to Buffalo, adding considerable new equipment. The plant will consist of two shops, one for heavy work equipped with large cranes and core ovens, the other for finer work. Joseph Kuhn is general manager of the company.

The Union Foundry & Machine Works, at Catasauqua, Pa., has been purchased by Leonard Peckitt, president of the Empire Steel & Iron Company, at public sale from the receiver, C. H. Zehnder.

The Kellogg Harvester Company, which was formed about a year ago and which secured the old plant of the Plano Harvester Company at Plano, Ill., is enlarging both its manufacturing and selling facilities. As stated in our machinery report, it has recently constructed a large machine shop and is now about

to add another foundry to its plant. The company is manufacturing grain binders, corn binders, mowers, shockers and cultivators. Its stockholders are largely citizens of Plano, including many employees. The binder is what is known as the Packerless binder, as it operates without the ordinary packer used on binders, as well as replacing canvas elevators with vertical sprocket chain conveyors. The offices of the company are in the First National Bank Building, Chicago.

#### Bridges and Buildings.

The Topeka Bridge & Iron Mfg. Company, Topeka, Kan., has been awarded a contract at \$13,984 for the building of the Sardou avenue bridge at Topeka. The total length of the spans of this bridge will be 883 feet.

The Chattanooga Iron & Wire Works, Chattanooga, Tenn., has made application for a charter, with an authorized capital of \$10,000. The following are the incorporators: Bruce R. Guthrie, G. W. Corey, S. E. Glandon, S. M. Hunt and J. D. Wilkins. It is the purpose of the company to manufacture iron and wire fencing, fire escapes, office and bank railing and all kinds of builders' iron work, and to take agencies for various iron building materials.

#### Fires.

The spool mill of J. P. Skillings, Bethel, Maine, was destroyed by fire January 18, with a loss of \$25,000.

Duffton Bros.' woolen mills, Spencer, Mass., were destroyed by fire January 21, with a loss of \$20,000.

The engine house, pattern shop and planing mill of the Pittsburgh, Shawmut & Northern Railroad, at St. Marys, Pa., were recently damaged \$35,000 by fire.

Strickland Brothers' machine shops at Tuscaloosa, Ala., were destroyed by fire early last week. The loss is placed at \$7000.

The plant of the Menominee Electric Mfg. Company, Menominee, Mich., was destroyed by fire January 23. The loss amounts to about \$50,000.

Fire on January 18 destroyed the McKay Carriage Works at Grove City, Pa. The loss is about \$65,000.

The power plant of the Terre Haute Power & Traction Company, Terre Haute, Ind., was damaged \$150,000 by fire on January 20.

#### Hardware.

Lovell Mfg. Company, Erie, Pa., in view of the increasing demand for its Anchor brand Wringers, has erected an addition to its main building. It is of brick, 200 feet in length by 40 feet wide, two stories high with basement, and is of the latest mill construction. It is provided with the automatic sprinkler system for protection against fire, as are the other buildings of the plant. Part of the sprinkler system is a cistern of 200,000 gallons capacity which has lately been completed. The additional floor space is not assigned to any one department, but is so placed as to afford every department heretofore crowded the space necessary to spread out and more nearly come up to the requirements of the business. The machinery necessary to equip the new building has been installed and by February 1 everything will be in running order. A contract has also been awarded for another brick building, 60 x 75 feet in area, two stories high, of fire proof construction, work on which will be begun as soon as the material can be got upon the ground.

Spring Steel Fence & Wire Company, Anderson, Ind., reports that during the first two weeks of January it shipped as much fencing as during the whole of the same month last year. The company is materially increasing its output by the erection of a large addition to the plant.

The Parmelee Wrench Company, 1076 West Monroe street, Chicago, has incorporated, the incorporators being Justin Parmelee, Roy Parmelee and J. C. Dillenbeck. The company has enlarged its works during the past year and is making preparations for handling a large trade during 1905.

The Moline Plow Company, Moline, Ill., will erect at Kansas City, Mo., a six-story warehouse 150 x 200 feet.

The Thurston Mfg. Company, Worcester, Mass., has taken manufacturing space in the Sawyer Building, at the corner of Beacon and Hermon streets, and will manufacture a new pipe wrench, a patent for which was recently granted to Charles H. Thurston, the president and treasurer of the company. Associated with Mr. Thurston in the company is A. B. Upham, a Boston patent attorney.

The National Mfg. Company, manufacturer of wire goods, Worcester, Mass., reorganized its board of officers at the annual meeting, held January 18. H. A. Hildreth, Boston, who has been president and manager for some years, has retired from the board, which now consists of the following persons: President, Fred. W. Collier; treasurer, C. A. Normand; clerk, James F. Upham; directors, these officers and C. O. Munger and W. L. C. Munger, all of Worcester. C. O. Munger was elected superintendent and W. L. C. Munger purchasing agent. The business will be continued along the old lines.

The Jackson Mfg. Company, Harrisburg, Pa., has just completed a shipment of its Jackson steel barrows to Australia. The works are being run full time with considerable business ahead.

The Penn Shovel Company, Warren, Pa., has elected the following officers: Arthur Walton, president; George L. Fordy, vice-president; Washington Hyde, secretary, and S. S. Leonard, treasurer.

The Streator Metal Stamping Company, Streator, Ill., has increased its capital stock from \$80,000 to \$100,000. The company states that it is having a large sale on Sterling all steel carpet sweepers, at the present time turning out 300 per day, which number is to be increased shortly by the installation of new machinery.

The New England Pin Company, Winsted, Conn., manufacturer of all kinds of pins, is to make a large addition to its plant. The new brick building will be 40 x 100 feet and four stories, and will replace a smaller wooden structure. The new building will not greatly increase the company's manufacturing capacity, but will give more room for storage and the increased advantage which comes from spreading out.

#### Miscellaneous.

The Dodge Mfg. Company, Mishawaka, Ind., is working overtime on a large order for pulleys for the Japanese Government. The order includes 2740 wood and 1400 iron pulleys. They are for use principally in the Japanese navy yards.

The Standard Steel Car Company, Pittsburgh, will build a large addition to its works at Butler, Pa., to provide facilities for the building of steel mail and baggage cars.

The South Bend Malleable Steel Range & Stove Company has been incorporated at South Bend, Ind., with \$10,000 capital. The directors are Henry C. Engman, Jr., Jacob Wolverton and Wm. Kizer.

The Alexandria Light & Power Company, Alexandria, Ind., proposes to install a water softening plant.

Levey Bros. & Co., printers, Indianapolis, Ind., have purchased a site at Senate avenue and Ohio street, that city, for a large printing plant.

The G. & D. Mfg. Company, Streator, Ill., has incorporated for \$12,000 for the manufacture of farm machinery. A new factory building, 40 x 100 feet, one and two stories high, will be erected. The incorporators are Frank Gahn, C. L. Horn and Herman Dorman.

The Tritt Electric Company, South Bend, Ind., has been incorporated with \$100,000 capital to manufacture electric automobiles. The directors are Burleigh E. Tritt, Daniel M. Calvert, Walter B. Pershing, Edgar R. Miller and Chas. M. Kreighbaum.

The Morley Twine & Machinery Company, Sioux City, Iowa, has under consideration the building of a binder twine mill at Sioux City. Plans are not yet fully matured, but it is expected that the plant will have floor space of 50,000 square feet and a capacity of 20 tons per day of binder twine, requiring considerable new machinery. Boilers of 800 horse-power will probably be installed.

Russell Wooldridge and C. D. Voris of Crawfordsville, Ind., will erect a large match factory at Memphis, Tenn. Mr. Wooldridge has been connected for years with the Indiana Match Company, Crawfordsville, and Mr. Voris has been the head of the Crawfordsville Wire Nail Company. They have a patent on a new match machine.

The Brown-Sphinx Company, Chicago, has incorporated for \$25,000 to manufacture railroad supplies. J. R. Kehlor, 603, 735 Adams street; B. L. Brown, and James Finnegan are incorporators.

The Forsyth Pattern Company, Youngstown, Ohio, has elected the following directors: John Stambaugh, Jr., George J. Renner, W. H. Rudge, W. H. Park and Frank Runser. The directors will elect officers within a short time.

The Youngstown Furnace & Supply Company has been organized at Youngstown, Ohio, with the following officers: Leon Gschwind, president and manager; L. H. Young, vice-president, and Frank H. Jennings, secretary and treasurer. The new concern will take over the business of the Youngstown Furnace Company, which is that of making the Lyon hot air furnaces, and in addition will make furnace supplies.

The Orr Automatic Electric Pump Company, Sidney, Iowa, has been organized with a capital stock of \$120,000, to manufacture an electric pump, the invention of Francis L. Orr. The pump is especially adapted for farm use, being intended for pumping water from wells; but it can also be used for pumping oil from the well. The pump is operated by an engine of sufficient power to furnish electric light as well, making it possible for each farmer to have a complete lighting plant and water works. The officers and directors are R. L. Estes, president; L. J. Abbey, secretary; C. A. Metelman, treasurer; Mark Morrow, C. E. Price, C. H. Polk, R. P. Lindsay, G. W. Engelke and G. M. Heckel.

The Bath Iron Works Company, Bath, Maine, one of the constituent companies of the Bethlehem Steel Corporation, the re-organized United States Shipbuilding Company, has been incorporated in Maine with a capital stock of \$500,000.

The Indiana Drain Tile Company has been organized and incorporated with \$100,000 capital to build a factory at Brooklyn, Ind. The officers are: President, J. M. Powell, Alexandria, Ind.; vice-president, J. F. Morris, Summitville, Ind.; secretary-treasurer, S. Free, Alexandria.

The Water Department of Harrisburg, Pa., will spend \$10,000 for a new large district main this year, in addition to taking over the operation of a filter plant of 12,000,000 gallons daily capacity, which is to be completed about June 1.

The Upton Motor Company has been formed at Lebanon, Pa., for the manufacture of automobiles. It has a charter from the State, and the incorporators are H. T. Atkins, T. L. Beckley and H. A. Ulrich of Lebanon, Pa.

The Standard Valve Company, 64 Federal street, Boston, is a new Massachusetts corporation which will put on the market a new automatic valve ball cock and faucet, known as the Thomas valve. Fred. S. Pillsbury is president; George W. Smith, treasurer, and Warren C. Rockwell, clerk. The capital stock is \$15,000. For the present the company will have the valve manufactured by outside parties.

Finding it necessary to erect a shop to repair the coke cars he uses in his own trade and also to build new cars, W. J. Rainey, Connellsville, Pa., has erected at Mt. Braddock shops with a capacity of several steel cars a day. The plant consists of two buildings, one 60 x 180 feet and the other 60 x 100 feet, and is equipped with modern machinery designed to build cars of the latest type. Mr. Rainey has found by experience that wooden cars are too expensive on account of the severe traffic they meet with in trains running with many steel cars, such as are used throughout the coke regions of Pennsylvania, and has decided to substitute steel cars for the wooden ones as fast as the latter become unfit for service. He is taking out the wooden sills of the wooden cars now in service and is substituting steel sills.

The Farr & Bailey Mfg. Company, Camden, N. J., will rebuild the part of its plant which was recently burned. No new machinery will be required.

The Aeolian Weber Piano & Pianola Company, New York, has taken a long lease of about 70,000 square feet of factory space in the Estabrook Building, Worcester, Mass. The company will remove its factory from New York and will manufacture its piano and pianola cases at Worcester as soon as the factory has been equipped. The Vocalion Organ Company, a branch of the same corporation, occupies an adjacent building at Worcester. It is understood that a considerable amount of new wood working machinery will be required for the new shops.

The Ajax Dynamite Works, Bay City, Mich., will rebuild its power plant, which was destroyed by fire, and has contracted for all material and machinery necessary for this purpose. The company contemplates installing a water cooling plant if arrangements can be made for suitable machinery.

The Bruley Steel Fence Post Company, Milwaukee, Wis., has been organized, with the following gentlemen as stockholders: Emery Bruley, Nellsville, Wis., the originator of the patent; James L. Gates, Kenneth W. Jacobs and Harry B. Hunter of Milwaukee, and Dr. R. B. Cunningham of Caddott, Wis. The company is incorporated for \$100,000.

The Continental Can Company, Syracuse, N. Y., has incorporated in Illinois for \$250,000. The company now has under construction plants at Syracuse and Chicago, work on which is being pushed rapidly forward.

At the annual meeting of the Harbison-Walker Refractories Company, Pittsburgh, manufacturer of fire brick of all kinds, the following officers were elected: S. P. Harbison, chairman; S. C. Walker, president; H. W. Croft, vice-president; Hamilton Stewart, secretary and treasurer; O. M. Reis, L. C. Durley, D. E. Carlyle (vice-president Portsmouth Harbison-Walker Company), A. C. Breen, E. M. Allen, W. M. Stanton, T. L. Chadbourne, Jr., of New York, T. H. Given, George W. Reese and Hay Walker, Jr.

Stockholders of M. H. Treadwell & Co., Lebanon, Pa., have elected these directors: M. H. Treadwell and H. Dougherty, New York; John H. Killinger, Grant Weldman and John Hunsicker, Lebanon. Mr. Killinger was re-elected president, Mr. Dougherty vice-president, and Mr. Hunsicker treasurer.

The White River Chair Company, Hartford, Vt., has decided to locate its plant in Brattleboro, which it will equip with a modern line of chair making machinery, purchased from L. G. McKnight & Son and F. H. Branchcroft of Gardner, Mass., and B. D. Whitney & Son and the Goodspeed Machine Company of Winchendon, Mass.

The plant of the Newburyport Car Company, Newburyport, Mass., has been sold to William F. Rannels, subject to ratification by the creditors.

The Toronto, Hamilton & Buffalo Railroad, Hamilton, Ont., has rebuilt its repair shops, which were destroyed by fire last fall. The new building is 36 x 206 feet, constructed of wood, the sides covered with corrugated iron and the roof with Johns-Manville asbestos roofing. Most of the machinery from the old shops has been installed and will be driven by a 15 horse-power Westinghouse motor. The only additional machinery to be put in will be an air compressor driven by a 30 horse-power motor.



## The Iron and Metal Trades

The purchase by the Cambria Steel Company of 40,000 tons of Basic and Bessemer Pig at \$15.50, at Valley furnaces, is regarded as significant and has been followed by further purchases from other sources of from 20,000 to 25,000 tons in the Pittsburgh market. The majority of sellers are now asking \$16. In the East the leading interest purchased for the Steel works at Philadelphia 15,000 tons of Basic Pig for delivery during the second quarter at \$16.50, delivered, and it is understood that the balance of the requirements, about an equal amount, is to be shipped from its own furnaces in the Pittsburgh district. Furnaces in eastern Pennsylvania have also sold round blocks of low phosphorus Pig for delivery both West and locally, and further business is pending.

The Foundry Iron markets are generally rather dull, with the exception of New England, in which district there have been a number of sales, with more interest taken, partly because of the settling of the cotton mill strike, which affects favorably a number of machinery builders.

In the Cast Iron Pipe industry the event of the week has been the awarding of the contract for 11,000 tons of Pipe for the Brooklyn high pressure salt water service to the Warren Foundry.

In the Steel markets there is a good deal of pressure for material, and it is only lately that a leading interest declined to consider altogether one contract for 25,000 tons.

New England has been the principal buyer of Steel Rails during the past week, two roads taking between 55,000 and 65,000 tons, nearly all of the work going to the Lackawanna mill. In the East the Baltimore & Ohio and in the West the Rock Island are in the market.

A very interesting canvass of the outlook for the Structural trade in all sections of the country has just been completed by the American Bridge Company. The reports indicate that about 90,000 tons of railroad bridge work is imminent, of which about one-half will be placed in the next three months, while the closing up of the remainder will depend upon financial arrangements. The company has also ascertained that from 500,000 to 600,000 tons of building work are on architects' boards, but it is uncertain whether very much of this will come out at an early day. The figures given do not include any municipal undertakings, such as the new Manhattan Bridge over the East River, which will require at least 50,000 tons.

Reports from the whole line of lighter finished material continue exceedingly encouraging. Specifications are coming in well and there are few indications that consumers have overbought.

The Old Material markets have suddenly displayed weakness, which may, however, prove only temporary, since the storm may seriously affect the situation. One of the large Steel works on the shores of Lake Erie has during the past week disposed of a very large accumulation of surplus Steel Scrap, nearly all the business being done by direct negotiations.

## A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,  
Declines in Italics.

At date, one week, one month and one year previous.

Jan. 26, Jan. 19, Dec. 28, Jan. 27,  
1905. 1905. 1904. 1904.

### PIG IRON:

Foundry Pig No. 2, Standard,				
Philadelphia .....	\$17.50	\$17.50	\$17.25	\$14.50
Foundry Pig No. 2, Southern,				
Cincinnati .....	16.25	16.25	16.25	12.50
Foundry Pig No. 2, Local, Chicago	17.50	17.50	17.00	14.00
Bessemer Pig, Pittsburgh.....	16.85	16.85	16.85	13.85
Gray Forge, Pittsburgh.....	16.10	16.25	15.85	12.75
Lake Superior Charcoal, Chicago	18.50	18.50	18.50	16.75

### BILLETS, RAILS, &c.:

Steel Billets, Pittsburgh.....	23.00	23.00	22.00	23.00
Steel Forging Billets, Pittsburgh	25.00	25.00	.....	.....
Steel Billets, Philadelphia.....	25.00	25.50	25.00	24.50
Steel Billets, Chicago.....	25.00	25.00	25.00	24.00
Wire Rods, Pittsburgh.....	31.00	31.00	30.00	30.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00

### OLD MATERIAL:

O. Steel Rails, Chicago.....	16.00	16.00	16.00	10.50
O. Steel Rails, Philadelphia....	17.50	17.75	17.00	12.50
O. Iron Rails, Chicago.....	21.00	21.00	22.25	15.00
O. Iron Rails, Philadelphia....	23.00	22.50	20.00	15.50
O. Car Wheels, Chicago.....	16.50	16.50	16.75	13.50
O. Car Wheels, Philadelphia....	16.00	16.00	15.00	13.00
Heavy Steel Scrap, Pittsburgh..	16.00	16.00	16.50	13.00
Heavy Steel Scrap, Chicago....	14.50	15.00	15.00	10.50

### FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia.	1.63½	1.70	1.63½	1.35
Common Iron Bars, Chicago....	1.65	1.65	1.65	1.40
Common Iron Bars, Pittsburgh.	1.74½	1.69½	1.69½	1.29½
Steel Bars, Tidewater.....	1.54½	1.54½	1.54½	1.44½
Steel Bars, Pittsburgh.....	1.40	1.40	1.40	1.30
Tank Plates, Tidewater.....	1.64½	1.64½	1.64½	1.74½
Tank Plates, Pittsburgh.....	1.50	1.50	1.50	1.60
Beams, Tidewater.....	1.64½	1.64½	1.64½	1.74½
Beams, Pittsburgh.....	1.50	1.50	1.50	1.60
Angles, Tidewater.....	1.64½	1.64½	1.64½	1.74½
Angles, Pittsburgh.....	1.50	1.50	1.50	1.60
Skelp, Grooved Steel, Pittsburgh	1.55	1.55	1.45	1.40
Skelp, Sheared Steel, Pittsburgh.	1.60	1.60	1.50	1.45
Sheets, No. 27, Pittsburgh.....	2.20	2.20	2.20	2.15
Barb Wire, Pittsburgh.....	2.20	2.20	2.20	2.50
Wire Nails, Pittsburgh.....	1.75	1.75	1.75	1.90
Cut Nails, Pittsburgh.....	1.75	1.75	1.75	1.70

### METALS:

Copper, New York.....	15.25	15.25	14.87½	12.62½
Spelter, St. Louis.....	6.15	6.10	5.85	4.70
Lead, New York.....	4.45	4.60	4.60	4.60
Lead, St. Louis.....	4.60	4.52½	4.55	4.45
Tin, New York.....	29.37½	29.25	29.35	28.25
Antimony, Hallett, New York...	8.50	8.50	8.75	6.75
Nickel, New York.....	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer,				
100 pounds, New York.....	3.74	3.74	3.74	3.64

## Chicago.

FISHER BUILDING, January 25, 1905.—(By Telegraph.)

This has been another quiet week in raw, semifinished and finished Iron and Steel products, but the lull is no more than is expected at this time of year. There are many evidences of overbuying on the part of purchasers, but inasmuch as the stocks now in their stores were bought at prices ruling much lower than the present there is no anxiety felt on that score by the actual consumer, the producers being the ones who will feel the demoralization effect should the consumptive demand not prove adequate to take care of present stocks in addition to the unusually large current production. Mills are rolling out materials at a terrific rate, but authorities differ as to how much of this production goes to stock piles and how much is shipped to consumers. Pig Iron is quiet, with prices unchanged. Billets are still scarce and held at a premium. New business in Rails, both Heavy and Light Sections, is less than that of last week. Some fairly large Structural orders have been placed locally. Plates are again quiet. Consumers of Sheets have evidently anticipated their wants for several months to come and there is a prospect of a glut in the market before the season is over. Boiler Tubes have been advanced by the leading producer about \$4 a ton. Iron and Steel Seamless Pipe and Seamless Tubing are unchanged in price. Inquiry is unusually active for Cast Pipe at this season of the year. Scrap has receded 50c. to \$1 from last week's prices and the tone is decidedly weak. Coke is strong, more because of car shortage than because of Coke shortage.

**Pig Iron.**—We make no change in any of our Pig Iron prices, because there has not been sufficient trading in any grade to affect prices one way or another. The situation shows a peculiar admixture of weakness and strength, with strong features rather outweighing the weak. Actual con-

sumptive demand is by no means great, and many consumers have large stocks piled up which they took on old low priced contracts rather than run the chance of having contracts lapse by time limitation. On the other hand, new furnaces seem so well supplied with orders that any attempt to break the market is met with solid resistance on the part of the producer. The Coke shortage, or, in most cases, the fear of Coke shortage, is another element of strength. We quote:

Lake Superior Charcoal.....	\$18.50 to \$19.00
Northern Coke Foundry, No. 1.....	to 18.00
Northern Coke Foundry, No. 2.....	to 17.50
Northern Coke Foundry, No. 3.....	to 17.00
Northern Scotch, No. 1.....	18.00 to 18.50
Ohio Strong Softeners, No. 1.....	19.30 to 19.80
Ohio Strong Softeners, No. 2.....	18.80 to 19.30
Southern Silvery, 4 to 6 per cent. Silicon.....	18.65 to 19.65
Southern Coke, No. 1.....	17.65 to 17.90
Southern Coke, No. 2.....	17.15 to 17.40
Southern Coke, No. 3.....	16.65 to 16.90
Southern Coke, No. 4.....	16.40 to 16.65
Southern Coke, No. 1 Soft.....	17.65 to 17.90
Southern Coke, No. 2 Soft.....	17.15 to 17.40
Southern Gray Forge.....	16.50 to 16.75
Southern Mottled and White.....	15.90 to 16.15
Malleable Bessemer.....	to 17.50
Standard Bessemer.....	18.50 to 19.00
Jackson County and Kentucky Silvery, 6 to 8 per cent. Silicon.....	20.30 to 22.30
Jackson County and Kentucky Silvery, 10 per cent. Silicon.....	to 23.30
Alabama Basic.....	17.15 to 17.40
Virginia Basic.....	17.15 to 17.40

**Rails and Track Supplies.**—A number of small orders for Standard Section Rails were booked by local mills during the last week, but no large ones. Prices are firm on the following basis: Standard Section Rails, \$28 per gross ton, at mill, in 500-ton lots or greater, plus full freight to destination; Light Rails from \$24 to \$30, according to weight, in car lots, at mill; Angle Bars, 1.35c. to 1.40c., f.o.b. mill; Spikes, 1.70c. to 1.75c.; Track Bolts, 2.30c. to 2.45c. Store prices on Track Supplies range from 15c. to 20c. per 100 lbs. above mill prices.

**Structural Material.**—An order for the fabrication of 2720 tons of Structural Steel and a smaller tonnage of Castings for the Mandel Building was placed with Brown-Ketcham Iron Works, Indianapolis, Ind. The South Halsted Street Iron Works, Chicago, has secured the contract for Structural Steel and Cast Iron work for the addition to the Union League Club, aggregating something like 700 tons. The Hansell-Elcock Company, Chicago, have the Steel and Casting contract for the Hillman store. Reports indicate that orders for railroad bridges are coming in in increasing volume. Current trading in unfabricated material is light. We quote: Beams and Channels, 3 to 15 inches, inclusive, 1.66½c.; Angles, 3 to 6 inches, ¼-inch and heavier, 1.66½c.; Angles, larger than 6 inches on one or both legs, 1.76½c.; Beams, larger than 15 inches, 1.76½c.; Zees, 3 inches and over, 1.66½c.; Tees, 3 inches and over, 1.71½c., with the usual extras for cutting to exact lengths, punching, coping, bending or other shop work. Local jobbers quote the minimum price on Angles, Beams and Channels, 1.90c., with 10c. advance for 18, 20 and 24 inch Beams and for Angles larger than 6 inches on one or both legs. These prices are for either random lengths or cut to lengths, but 10c. to 15c. higher is charged for very small or wasteful odds.

**Cast Iron Pipe.**—Inquiry is rather larger than usual at this time of year and prices are firm at \$28.50 a gross ton for 4-inch Water Pipe and \$27.50 for 6-inch and larger, with \$1 extra for Gas Pipe.

**Old Materials.**—The market has again receded, the break in prices ranging from 50c. to \$1 on lines which have figured actively. On many other lines where there has not been enough trading to make a market old prices are repeated. Large lists have been sold by the St. Paul, the Burlington and the Rock Island systems, an aggregate of about 8000 tons having been thrown on the market by these three roads. The bids received by railroad purchasing agents also indicate the weakness of the market, as the range from highest to lowest bid on almost every commodity is from \$1.50 to \$3 a ton, with the majority of the bids at the low figures. We quote per gross ton:

Old Iron Rails.....	\$21.00 to \$21.50
Old Steel Rails, 4 feet and over.....	16.00 to 16.50
Old Steel Rails, less than 4 feet.....	16.00 to 16.25
Heavy Relaying Rails, subject to inspection.....	22.50 to 23.00
Heavy Relaying Rails, for side tracks.....	20.00 to 20.50
Old Car Wheels.....	16.50 to 16.75
Heavy Melting Steel Scrap.....	14.50 to 15.00
Frogs, Switches and Guards.....	14.50 to 15.00
Mixed Steel.....	10.00 to 10.50

The following quotations are per net ton:

Iron Fish Plates.....	\$19.00 to \$19.50
Iron Car Axles.....	22.00 to 22.50
Steel Car Axles.....	16.50 to 17.00
No. 1 Railroad Wrought.....	17.50 to 18.00
No. 2 Railroad Wrought.....	16.00 to 16.50
Shafting.....	17.00 to 17.50
No. 1 Dealers' Forge.....	14.00 to 14.50
Wrought Pipes and Flues.....	12.00 to 12.50
No. 1 Cut Bushing.....	12.00 to 12.50
Iron Axle Turnings.....	12.25 to 12.75
Soft Steel Axle Turnings.....	12.25 to 12.75
Machine Shop Turnings.....	11.75 to 12.00
Cast Borings.....	9.00 to 9.25

Mixed Borings, &c.....	9.00 to 9.25
No. 1 Mill.....	9.75 to 10.00
Country Sheet.....	8.50 to 9.00
No. 1 Boilers, cut to Sheets and Rings.....	12.00 to 12.50
No. 1 Cast Scrap.....	13.00 to 13.50
Stove Plate and Light Cast Scrap.....	10.75 to 11.25
Railroad Malleable.....	13.50 to 14.00
Agricultural Malleable.....	12.50 to 13.00

**Coke.**—While Western blast furnaces have been able by the exercise of the greatest pressure on their Coke producers to secure enough Coke to keep them running full blast, there have been times when only a very few hours' supply was on hand before the next trainload arrived. Every snowfall or period of low temperature is reflected in a crippled railroad service, and while the Coke ovens are understood to be well caught up with their orders the difficulty in the Chicago market is to get the Coke here from the ovens. Connellsville Foundry Coke is offered at from \$5.40 to \$5.65 for strictly 72-hour Foundry, and about 25c. less for Furnace quality. West Virginia Cokes are quotable at about \$2.50 at the ovens or \$5.15, Chicago. Wise County, Va., Cokes can be had at from \$4.50 to \$4.75, Chicago; Milwaukee Solvay, \$5.50.

**Metals.**—Copper remains steady at 15½c. to 15¼c. for Casting, and 15¾c. to 15½c. for Lake, in car lots, with ¼c. to ½c. higher for small lots. Lead is weaker in tone, and 17½c. per 100 lbs. lower in price, being quoted in 50-ton lots at 4.45c., in car lots at 4.50c., and 5c. to 5¼c. in small lots. Pig Tin is unchanged at 30c. to 30½c. in car lots. Spelter is advanced for car lots, but unchanged for small lots, the car lot price being 6.15c., and the small lot price 6½c. Sheet Zinc is held at \$7.50, base, LaSalle, equivalent after deducting discounts to \$7.25, Chicago, for car lots of 600-lb. casks, with small lots selling at \$7.50 to \$8. In Old Metals, Copper Wire has declined about ¼c., and Heavy Copper ¼c. Prices are as follows: Copper wire, 13¼c.; Heavy, 13c.; Copper Bottoms, 12c.; Copper Clips, 12¾c.; Red Brass, 11¾c.; Red Brass Borings, 10c.; Yellow Brass, Heavy, 9c.; Yellow Brass Borings, 7¾c.; Light Brass, 7¼c.; Lead Pipe, 4¼c.; Tea Lead, 4c.; Zinc, 4½c.; Pewter, No. 1, 19¼c.; Block Tin Pipe, 25c.

(By Mail.)

**Billets.**—Billets are hard to get at any price, and are held at a premium by such makers as will consent to sell them. The attitude of the mills is that they require all the Steel for their own fabrication and that its sale in the form of Billets is only done as an accommodation. Bessemer Billets, while officially quoted \$24, are at an actual minimum of \$25 for base size 16 square inches in section and larger up to but not including 100 square inches, and \$27 for Bessemer Billets larger than 100 square inches in section. Open Hearth Forging Billets are held by all producers at from \$28 to \$32 a ton, in spite of the fact that the official price of \$26 is nominally in force. Sheet and Tin Plate Bars are still held at premiums ranging from \$1 to \$3 a ton above official Billet pool price.

**Plates.**—While current business is quiet, specifications already received by mills are so heavy that they are running to their utmost capacity in an endeavor to keep their orders from piling up. Official prices at Chicago for shipment from mill in car lots are: Tank quality, ¼-inch and heavier, wider than 14 and up to 100 inches wide, carloads, Chicago, 1.66½c.; 3-16 inch, 1.76½c.; Nos. 7 and 8 gauge, 1.81½c.; No. 9, 1.91½c.; Tank quality, 14 inches wide to 6 inches, 10c. below these prices; Flange quality, any width up to 100 inches, 1.76½c.; Sketch Plates, in Tank quality, 1.76½c.; in Flange quality, 1.86½c. Store prices are strengthening. Tank Plate, ¼-inch and heavier up to 72 inches wide, is quoted at 1.90c. to 2c.; from 72 to 96 inches wide, 2c. to 2.10c.; 3-16 inch up to 60 inches wide, 2c. to 2.10c.; 72 inches wide, 2.25c. to 2.35c.; No. 8 up to 60 inches wide, 2.05c. to 2.15c.; Flange quality, 25c. extra.

**Sheets.**—Business is active and many mills are running to their full capacity. Prices are unchanged, the following being the minimum quotations for car lots at Chicago: Nos. 5 and 10, 1.81½c.; Nos. 11 and 12, 1.86½c.; Nos. 13 and 14, 1.91½c.; Nos. 15 and 16, 1.96½c.; Nos. 18 and 20, 2.21½c.; Nos. 22 and 24, 2.26½c.; Nos. 25 and 26, 2.31½c.; No. 27, 2.36½c.; No. 28, 2.46½c.; No. 29, 2.61½c.; No. 30, 2.71½c. Store prices rule as follows: Blue Annealed Sheets, No. 10, 2.05c. to 2.15c.; No. 12, 2.10c. to 2.20c.; No. 14, 2.20c. to 2.30c.; No. 16, 2.30c. to 2.40c.; Nos. 18 and 20, 2.45c. to 2.50c.; Nos. 22 and 24, 2.50c. to 2.60c.; No. 26, 2.55c. to 2.65c.; No. 27, 2.60c. to 2.70c.; No. 28, 2.70c. to 2.80c. Galvanized Sheets are unchanged but strong at the following net prices, f.o.b. Chicago, in car lots from mill: No. 16, 2.61½c.; Nos. 18 and 20, 2.76½c.; Nos. 22 and 24, 2.91½c.; No. 26, 3.11½c.; No. 27, 3.31½c.; No. 28, 3.51½c. These prices range from 75, 10 and 10 at Pittsburgh in the heavier gauges to 80 and 2½ in the lighter. An effort is being made by leading jobbers to put into force this week the net price basis of selling Galvanized Sheets from store as against the use of discounts. These net prices are as follows: Nos. 10 to 18, inclusive, up to 36 inches wide, 3c. to 3.10c.; No. 20 up to 30 inches wide, 3c. to 3.10c.; Nos. 22 to 24, 3.15c. to 3.25c.; No. 26, 3.40c. to 3.50c.; No. 27, 3.60c. to 3.70c.;



No. 28, 3.85c. to 3.95c.; No. 29, 3.75c. to 3.90c.; extras for Sheets wider than 30 inches are charged on gauges No. 20 and lighter, the extras varying with the widths and gauges. Such dealers as sell on the discount basis quote the following minimum figures: Nos. 10, 12 and 14, 36 to 48 inches wide, 75 to 75 and 10 per cent.; No. 16, 75 and 2½ to 70 and 10 per cent.; Nos. 18 and 20, 75 and 7½ to 70 and 10 per cent.; Nos. 22 and lighter, 70 and 10 per cent.

**Bars.**—Iron Bars are held at 1.65c. to 1.70c., base, half extras, Chicago, in car lots. Soft Steel Bars are firm at 1.56½c., base, half extras, Chicago, in car lots of either Bessemer or Open Hearth; Soft Steel Hoops at 1.71½c. rates, full extras, in car lots; Soft Steel Angles, Channels, Tees and Shapes belonging to the Bar class, 1.66½c., half extras, Chicago, in car lots. Quantity differentials are added to the regular extras for size and for less than car lots, as follows: Less than 2000 lbs. down to 1000 lbs. of a size, 10c. extra; less than 1000 lbs. of a size, 30c. extra. Store prices on Iron Bars have advanced and quotations now range from 1.85c. to 2.20c., according to quantity, plus full extras. Steel Bars are still held down to the minimum of 1.75c., base, half extras, from store. Soft Steel Angles and Shapes, 1.85c., half extras; Soft Steel Hoops, 2.10c., full extras. On Soft Steel Bars, Angles, Shapes and Hoops from store, 5c. or 10c. higher than these minimum prices are charged for small quantities.

**Merchant Steel.**—Specifications are not as active as they have been, but they are still coming in in a volume that taxes the capacity of the mills to supply. Prices are unchanged. We quote: Open Hearth Spring Steel is being held at 2c., Chicago, to the general trade. Other prices, based on the new Bar schedule of December 20, are: Smooth Finished Machinery Steel, 1.81½c.; Smooth Finished Tire, 1.76½c.; Flat Sleigh Shoe, 1.61½c.; Concave and Convex Sleigh Shoe, 1.76½c.; Cutter Shoe, 2.30c.; Toe Calk Steel, 2.11½c.; Railway Spring, 1.76½c.; Crucible Tool Steel, 6½c. to 8c.; special grades of Tool Steel, 13c. and up. Shafting is unchanged for the present at 52 per cent. discount in car lots and 47 per cent. in less than car lots in base territory.

**Merchant Pipe.**—Business is unusually active for this time of year. Present official discounts at Chicago in car lots to consumers from mill are:

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
	Per cent.	Per cent.	Per cent.	Per cent.
¾ and 1 inch.....	66.85	50.85	64.85	48.35
1¼ and 1½ inches.....	70.85	58.85	68.85	56.85
¾ to 6 inches.....	74.85	64.85	73.35	63.35
7 to 12 inches.....	69.85	54.85	68.35	52.85
Extra strong, plain ends, ¾ to 1 inch.....	59.85	47.85	57.85	45.85
1¼ to 4 inches.....	66.85	54.85	64.85	52.85
4½ to 8 inches.....	62.85	50.85	60.85	48.85
Double extra strong, plain ends.....	55.85	44.85	53.85	42.85

**Boiler Tubes.**—The long heralded advance in the price of Boiler Tubes has at last come in the shape of two points lower discounts, or an average of \$4 a ton advance on the material. This advance applies only to Iron and Steel Lap Weld Tubes, as Seamless Steel prices from mill have not yet been changed. This makes the official discounts on less than car lots at Chicago for shipment from mill as follows:

	Steel.	Iron.	Seamless.
1 to 1½ inches.....	42.35	39.35	52.35
1¾ to 2¼ inches.....	54.35	39.35	40.35
2½ inches.....	56.35	44.35	43.35
2¾ to 5 inches.....	62.35	51.35	{ up to 4 in. 50.85
6 to 13 inches.....	54.35	39.35	....

Independent mills have not yet announced changes in quotations. Store prices have been advanced not only on Steel and Iron Tubes, but on Seamless as well, the new quotations being as follows:

	Steel.	Iron.	Seamless.
1 to 1½ inches.....	40	35	42½
1¾ to 2¼ inches.....	50	35	35
2½ inches.....	52½	35	37½
2¾ to 5 inches.....	60	47½	45
6 inches and larger.....	50	..	..

Owing to the increased demand for office and warehouse facilities at Chicago the Solid Steel Tool & Forge Company has moved its office to suite 620-21 Monadnock Block and its warehouse to 277-79 South Canal street. George Ackerman, Western sales manager, is in charge of all matters pertaining to Chicago territory.

David Evans, Chicago agent for the Sloss-Sheffield Steel & Iron Company, is sending to the trade a Letter Opener bearing his name on one side of the blade and that of the company on the other.

J. H. Eyman, formerly of the Homestead Steel Works, has been appointed master mechanic of the Carnegie Steel Company's Donora plant, Donora, Pa., and G. H. Pfeffer, formerly with the Pittsburgh Plate Glass Company, at Parkersburg, W. Va., has been appointed assistant superintendent of the open hearth department at Donora.

## Birmingham.

BIRMINGHAM, ALA., January 23, 1905.

The business in Iron the past week was confined to a very narrow compass. An attempt was made to verify the statement that a leading Pipe interest held options on 30,000 tons for delivery, principally for the second quarter, but no one was to be found who would acknowledge to any information upon the subject. That the Pipe company was willing to buy was evidenced by its asking for prices and options, but current values were not to its liking and it withdrew from the market. That is the only conclusion warranted from information obtainable.

Apparently prices are unchanged and the same quotations that prevailed last week are repeated this week. When one calls attention to the fact that this market is being quoted as on the basis of \$13.50 for No. 2 Foundry sales sheets at higher figures are instantly produced to show that better figures are being obtained. As only small lots are selling, there is no temptation in the demand to ease off the price. The market is without a single feature of general interest to the trade. Some No. 1 Soft sold at \$14.25 and some No. 2 Foundry sold at \$14. Some of the latter also sold at \$13.75. Reports are current from other markets of sales of No. 2 Foundry at \$13.50, but it is impossible to get a single admission of the acceptance of that price. If it did obtain in any case the amount was small. The demand for the other grades has been influenced by the fact that sellers have notified their agents as well as buyers that they could not supply them. No. 3 Foundry is quoted at \$13.25 to \$13.50, with a slim chance of obtaining a very limited amount. The same can be said of Gray Forge, which is quoted at \$12.75. No. 4 Foundry, if one could find any, would be quotable at about \$13. No sales are reported that would serve as a guide to quotations.

There is some change in the situation as to the output. The Tennessee Coal & Iron Company has blown in two of its furnaces at Bessemer and anticipates that it will not only be enabled to keep these in commission, but will also be enabled to add other furnaces as fast as it accumulates material. The furnaces at Bessemer have been out of blast for some time back and their blowing in again is an encouraging feature of the situation. There will be others to blow in, and when they are ready there will be some that will go out for necessary repairs. But just when this will happen is an unknown factor in the output. The Ensley furnaces are engaged on Basic Iron and they will probably continue to be employed on that grade for the entire year. This company has had many discouragements to face in efforts to bring order out of chaos, but its plans are gradually getting into shape.

The Louisville & Nashville Railroad has given orders to its shops at New Decatur to build 680 new cars, of which 480 are to be box cars, 100 flat cars and 100 refrigerator cars.

The Bessemer water works, which have been under way so long, have at last been completed and are now put in operation.

Building operations are going ahead with a rush and architects are unanimous in predicting the greatest year of activity in that line that the city has ever known. Money is plentiful. Some big things for this district are on the tapis, but they are slow to mature.

## Cincinnati.

FIFTH AND MAIN STS., January 25, 1905.—(By Telegraph.)

**Pig Iron.**—The market during the past week has been dull, and has not responded to the touch as was anticipated a week since. The general situation is still regarded as strong, but there is a want of interest, buyers as a rule appearing very unconcerned as regards the situation, apparently waiting for further developments before entering into any new contracts. Considerable speculative Iron is said to be on the market that report says can be secured at a shade lower figure than the ruling quotations. This, in a measure, has a depressing effect, the tendency being to suppress what otherwise might be a rising market. Inquiry during the week has been comparatively light, confined to one or two of the largest concerns almost exclusively. The sales made while representing quite a tonnage in the aggregate have been made up of numerous small lots, and were to consumers who needed Iron for immediate requirements. The furnaces are said to be resting easy with clean yards in many instances, and orders booked for the shipment of current output. Southern No. 2 is firmly established at \$13.50, Birmingham basis, with several cases noted of sales being made at a shade higher, where a particular brand was demanded. Northern No. 2 is now being offered at \$16, furnace, which is apparently the maximum. Industries throughout the country using Iron in its various forms are all reported to be unusually busy, and the next week or two is expected to show a material increase in sales in this territory. There is one inquiry for 1100 tons of Bessemer from one of the leading car companies. Fifteen hundred tons are required by a

large manufacturing concern in southern Ohio, with the leading Pipe industry reported to be looking for anything suitable for its needs. Freight rates from Hanging Rock district to Cincinnati, \$1.15, and from Birmingham \$2.75. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1.....	to \$16.75
Southern Coke, No. 2.....	to 16.25
Southern Coke, No. 3.....	to 15.75
Southern Coke, No. 4.....	to 15.50
Southern Coke, No. 1 Soft.....	to 16.75
Southern Coke, No. 2 Soft.....	to 16.25
Southern Coke, Gray Forge.....	to 15.25
Southern Coke, Mottled.....	\$14.75 to 15.00
Ohio Silvery, No. 1.....	20.65 to 21.15
Lake Superior Coke, No. 1.....	to 17.65
Lake Superior Coke, No. 2.....	to 17.15
Lake Superior Coke, No. 3.....	to 16.05

#### Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	\$18.50 to \$19.00
Lake Superior Car Wheel and Malleable	18.00 to 18.50

**Coke.**—Demand is good, with a slight change for the better reported in the way of delivery. The matter of equipment enters less into the situation than it did a week previous, and consumers are being well provided for. The best grades of Connellsville Foundry are quoted at \$2.75 to \$3.25, f.o.b. ovens.

**Plates and Bars.**—A very fair business obtains, considerable estimating being done. Structural Material is becoming more active as the spring advances. Prices are holding firm, with no apparent intention of any change contemplated. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.65c., with half extras; the same in smaller lots, 1.90c., with full extras; Steel Bars, in carload lots, 1.53c., with half extras; the same in smaller lots, 1.75c., with full extras; Base Angles, 1.63c., in carload lots; Beams and Channels, in carload lots, 1.63c.; Plates, ¼-inch and heavier, 1.63c., in carload lots; in smaller lots, 1.90c.; Sheets, 16-gauge, in carload lots, 2.15c.; smaller lots, 2.70c.; 14-gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; Steel Tire, ¾ x 3-16 and heavier, 1.73c., in carload lots.

**Old Material.**—The market for this class of Material is quiet, transactions of small tonnage being the rule. Prices are, as far as can be obtained, about the same. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, \$17 to \$18 per net ton; No. 1 Cast Scrap, \$14 to \$14.50 per net ton; Iron Rails, \$21.50 to \$22 per gross ton; Steel Rails, rolling mill lengths, \$14.50 to \$15 per gross ton; Relaying Rails, 56-lb. and upward, \$23 per gross ton; Iron Axles, \$21 to \$2 per net ton; Car Wheels, \$16 to \$17 per gross ton; Heavy Melting Scrap, \$14.50 to \$15 per gross ton; Low Phosphorus Scrap, \$17 to \$18 per gross ton.

## Pittsburgh.

PARK BUILDING, January 25, 1905.—(By Telegraph.)

**Pig Iron.**—We note a fair inquiry, and the tone of the market is regarded as a trifle stronger than last week, probably due to the purchase of 40,000 tons of Bessemer by the Cambria Steel Company. The action of the Bessemer Pig Iron Association in reaffirming its price of \$16, Valley furnace, for Bessemer and Basic Iron for first quarter shipment has also had a good effect. For ordinary lots of Bessemer and Basic Iron \$15.75 to \$16, Valley furnace, is quoted, with some sellers refusing to shade \$16. On large lots to actual consumers \$15.50, Valley furnace, could be done. There is a little better inquiry for Foundry Iron and Northern brands of No. 2 are held at \$16 to \$16.50, Valley furnace. We note a sale of about 1000 tons at \$16 to \$16.25, Valley furnace. In the past two weeks there have been sales of 10,000 tons or more of Northern Gray Forge and the market is a trifle stronger. We quote Northern brands of Forge Iron at \$15.25 to \$15.40, Valley furnace, equal to \$16.10 and \$16.25, Pittsburgh. A sale of 3000 tons of Northern forge has been made to a local consumer at \$16.10, delivered, Pittsburgh.

**Steel.**—A continued active demand is felt for Billets and Sheet and Tin Plate Bars, particularly the latter, as all the leading Sheet and Tin Plate mills are in operation to full capacity and the consumption of Bars is very heavy. We quote Bessemer and Open Hearth Billets of ordinary carbons at \$22 to \$23, and Sheet and Tin Bars \$25 and upward for long lengths. We quote Forging Billets from 0.25 to 0.40 carbon at \$25, while from 0.40 to 0.60 carbon \$26 and upward is asked.

(By Mail.)

The purchase of 40,000 tons of Pig Iron, mostly Basic, made last week by the Cambria Steel Company, Johnstown, Pa., from W. P. Snyder & Co., on the basis of \$15.50, Valley furnace, shipments to commence at once and to extend into March and April, has had the effect of considerably

strengthening the Pig Iron market. In addition to this purchase, the Lackawanna Steel Company has traded 7000 tons of Steel Scrap to the Ohio Iron & Metal Company for 7000 tons of Bessemer Iron, which the latter bought some time ago. In addition to these two purchases some other good sized lots have been sold, one of 3000 tons of Bessemer for February, March and April delivery at \$15.50, Valley furnace. In all, about 60,000 to 65,000 tons of Bessemer and Basic Iron have been sold in the past week, most of it on the basis of \$15.50, Valley furnace, while the balance of it brought up to \$16, Valley furnace.

A meeting of the Bessemer Pig Iron Association was held in Cleveland, January 21, at which the members decided to hold their Iron at \$16, Valley furnace, and not shade this price. Reports submitted at the meeting showed that the Valley furnaces are pretty well sold up for the first quarter, and have very little Iron to spare for this delivery. With the enormous rate of production of Pig Iron at the present time, amounting to over 21,000,000 tons per year, it will require a very heavy consumption to take this, but so far the Iron has been absorbed as fast as made, and stocks both at furnaces and in the yards of consumers are very light. The absolute minimum price of Bessemer and Basic Iron is \$15.50, while most sellers ask \$16, at furnace. The demand for Foundry Iron has improved the past week, and Northern No. 2 is held at \$16, minimum, for large lots, and up to \$16.50, at furnace, for small lots. We note a number of sales of No. 2 Foundry Iron on the basis of \$16.50, at Valley furnace. There has been some inquiry for Forge Iron in the past two weeks, and several local consumers have bought quite heavily. We quote Northern Forge Iron at \$15.30, Valley furnace, equal to \$16.15, Pittsburgh. A recent purchase by a local consumer of nearly 6000 tons of Southern Forge Iron was on the basis of \$12.50, Birmingham, or \$16.85, Pittsburgh. The Southern Pig Iron market is extremely firm, the furnaces holding Gray Forge at \$12.50, and No. 2 Foundry Iron at \$13.50, Birmingham, and refusing to shade these prices.

The Steel market is active and consumers readily pay \$2 a ton or more above official prices for Billets and Bars. Ordinary Bessemer and Open Hearth Billets bring \$23 and higher, while Sheet and Tin Bars in long lengths bring \$25 to \$26, Pittsburgh. The consumption of Sheet and Tin Bars at the present time is very heavy, as practically all of the Sheet and Tin Plate mills are in operation to full capacity.

In the Finished Iron and Steel trades there is nothing of importance to note. The demand is not as active as it was in December, but January is always regarded as the duller month of the year in the trade and the present is no exception. While new tonnage is not as large as last month, the finishing mills booked a very heavy tonnage of Sheets, Tin Plate and other products in December, before the advances in prices were made, and are now running largely on specifications on these contracts, which are coming in very satisfactorily. The production of Sheets and Tin Plate at the present time is the heaviest ever known, the American Sheet & Tin Plate Company operating its Sheet and Tin Plate mills to practically full capacity, while the independent mills are running very full.

About the only disquieting feature of the Iron trade is Rails, and the fact that the railroads have not placed a larger tonnage for Rails for delivery this year is a distinct disappointment. It is said that the new tonnage for Rails booked by the mills up to this time is only about 750,000 tons, which is much less than the tonnage anticipated by the rail mills when the price of \$28 was reaffirmed for this year.

**Ferromanganese.**—The demand is more active than for some time, due to the fact that all the Steel mills are running to full capacity. We quote English and domestic 80 per cent. Ferro at \$45, delivered, in large lots.

**Rods.**—Prices on Rods are firm and there is a moderate inquiry. We quote Bessemer and Open Hearth Rods at \$31 to \$31.50, Pittsburgh.

**Skelp.**—The demand is very active and seems to be beyond the capacity of the mills to furnish promptly. We are advised that some have their entire output sold up for the next three or four months. Prices are very firm and we quote: Grooved Iron Skelp, 1.80c. to 1.85c.; Sheared, 1.90c. to 1.95c.; Grooved Steel Skelp, 1.55c. to 1.60c., and Sheared, 1.60c. to 1.65c. These prices apply on ordinary widths and gauges, f.o.b. cars, maker's mill, terms 30 days, less 2 per cent. for cash in 10 days.

**Muck Bar.**—The market is fairly firm, but the demand in the past week or two has been quiet. We quote best grades of Muck Bar, made from all Pig Iron, at \$28.50 to \$29, Pittsburgh.

**Steel Rails.**—No large orders have been closed since our last report. The Baltimore & Ohio Railroad order of 25,-



000 tons is expected to be placed this week. We quote Standard Sections at \$28, at mill. The demand for Light Rails is not as active as it has been, and we quote these at \$23.50 to \$26, depending on weight.

**Structural Material.**—Inquiries are a little better in the past week and a fair amount of business is in prospect. The Latrobe Steel Company, Latrobe, Pa., is in the market for some Steel buildings which will require from 1500 to 2000 tons. The inquiry for bridge work from the railroads is quiet, and is not expected to be very active for a month or more yet. We quote: Beams and Channels, up to 15-inch, 1.50c.; over 15-inch, 1.60c.; Angles, 3 x 2 x 1/4 inch thick up to 6 x 6 inches, 1.50c.; Angles, 8 x 8 and 7 x 3 1/2 inches, 1.60c.; Zees, 3-inch and larger, 1.50c.; Tees, 3-inch and larger, 1.55c. Under the Steel Bar Card Angles, Channels and Tees under 3-inch are 1.50c., base, for Bessemer, and 1.55c., base, for Open Hearth, subject to half extras on the Standard Steel Bar Card.

**Plates.**—We note only a fair demand for Plates, which is not up to the expectation of the mills by any means. While new tonnage is light, specifications on contracts placed with the mills before the advance in prices in December are coming in very satisfactorily. If reports are true that the Steel car companies have taken orders for 75,000 cars, it ought to mean a good deal of tonnage in Plates to the mills before these cars can be built. It is said that official prices are being firmly held and we quote: Tank Plate, 1/4 inch thick, 6 1/4 to 14 inches wide, 1.40c., base; over 14 inches wide and up to 100 inches in width, 1.50c., base, at mill, Pittsburgh. Extras over the above prices are as follows:

	Extra per 100 pounds.
Gauges lighter than 1/4 inch to and including 3-16 inch Plates on thin edges.....	\$0.10
Gauges No. 7 and No. 8.....	.15
Gauge No. 9.....	.25
Plates over 100 to 110 inches.....	.05
Plates over 110 to 115 inches.....	.10
Plates over 115 to 120 inches.....	.15
Plates over 120 to 125 inches.....	.25
Plates over 125 to 130 inches.....	.50
Plates over 130 inches.....	1.00
All sketches (excepting straight taper Plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)...	.10
Complete Circles.....	.20
Boiler and Flange Steel Plates.....	.10
Marine, "A. B. M. A." and ordinary Fire Box Steel Plates.....	.20
Still Bottom Steel.....	.30
Locomotive Fire Box Steel.....	.50
Shell Grade of Steel is abandoned.	

**TERMS.**—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum, and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within ten days from date thereof, discount of 1/2 of 1 per cent. is allowable. Pacific Coast base, 1.40c. f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 inches wide down to 6 inches of Tank, Ship or Bridge quality.

**Sheets.**—As noted last week, the demand is not as urgent as it was in December, but this is for the reason that the leading Sheet mills took on very heavy contracts before prices were advanced last month and are now running mostly on specifications on these contracts. The output at the present time is the heaviest ever known, the American Sheet & Tin Plate Company operating practically all of its capacity, while the independent mills are also in full operation. In this condition it will take a very large consumption of Sheets to absorb the output. Prices are quite firm and we quote: No. 24, box annealed, one pass through cold rolls, 2.05c.; No. 26, 2.15c.; No. 27, 2.20c., and No. 28, 2.30c. We quote Galvanized Sheets as follows: Nos. 22 and 24, 2.75c.; Nos. 25 and 26, 2.95c.; No. 27, 3.13c.; No. 28, 3.35c. We quote No. 28 Gauge Painted Roofing Sheets at \$1.65 per square, and Galvanized Roofing Sheets, No. 28 Gauge, at \$2.85 for 2 1/2-inch corrugation. Jobbers charge the usual advances over above prices for small lots from store.

**Iron and Steel Bars.**—Specifications on contracts from implement and car building concerns are coming in very nicely for both Iron and Steel Bars and new tonnage is also fairly heavy, giving the mills plenty of work. Some consumers of Iron Bars have gone back to the use of Steel Bars, as they are \$5 to \$6 a ton cheaper than the former. We quote Iron Bars at 1.70c., Youngstown, or 1.74 1/2c., Pittsburgh. We quote Bessemer and Open Hearth Bars at 1.40c., base, for carloads and larger lots, with the usual advances for small lots.

**Hoops and Bands.**—Steel Hoops remain on the basis of 1.55c. and Bands at 1.40c., base, extras on the latter being as per Steel Card, f.o.b. maker's mill. It is said these prices are being held and demand is fairly active.

**Tin Plate.**—A fair amount of new tonnage is being placed in Tin Plate, but the mills are so well sold up on old contracts at lower prices than are now ruling that they are unable to take care of very much new business and make prompt deliveries. For this reason Tin Plate for prompt shipment sometimes commands a premium of 10c. or more over the regular price. We quote 100-lb. Cokes at \$3.50, net, f.o.b. Pittsburgh, terms 30 days, or 2 per cent. off for cash in ten days.

**Merchant Pipe.**—The demand continues quite active and all the mills have a very heavy tonnage on their books. It is probable nothing will be done until spring with the inquiry of the Ohio Fuel Supply Company for about 100 miles of Line Pipe. Prices are firm and are said to be generally held. Discounts to consumers in carloads are as follows:

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
	Per cent.	Per cent.	Per cent.	Per cent.
1/2 and 3/4 inch.....	68 1/2	52 1/2	66 1/2	50 1/2
3/4 and 1 inch.....	72 1/2	60 1/2	70 1/2	58 1/2
1 to 6 inches.....	76 1/2	66 1/2	75	65
7 to 12 inches.....	71 1/2	56 1/2	70	54 1/2
Extra strong, plain ends,				
1/2 to 3/4 inch.....	61 1/2	49 1/2	59 1/2	47 1/2
3/4 to 1 inch.....	68 1/2	56 1/2	66 1/2	54 1/2
1 to 4 inches.....	64 1/2	52 1/2	62 1/2	50 1/2
Double extra strong, plain ends, 1/2 to 8 inches.....	57 1/2	46 1/2	55 1/2	44 1/2

**Boiler Tubes.**—The demand is fairly active, but the mills could take care of a good deal more tonnage if they had it. Discounts in carloads are as follows:

	Boiler Tubes.	Iron.	Steel.
1 to 1 1/2 inches.....		45	48
1 1/2 to 2 1/4 inches.....		45	60
2 1/4 inches.....		50	62
2 1/2 to 5 inches.....		57 1/2	68
6 to 13 inches.....		45	60

**Merchant Steel.**—The mills continue very busy on contracts, and a good deal of new tonnage is also being placed. Indications are that the demand this year for Agricultural, Tool and other kinds of Steel will be very heavy. Prices are firm, but unchanged, and we quote: Tire Steel, 1.60c. to 1.65c.; Smooth Finished Machinery Steel, 1.60c.; Open Hearth Spring Steel, 2c. to 2.10c.; Toe Calk, 1.90c. to 2c.; Cold Rolled Shafting is 52 per cent. off in carloads and 47 per cent. in less than carloads, delivered in base territory.

**Railroad Spikes.**—We note a continued heavy demand, and several of the mills in this district that make Railroad Spikes have their entire product sold up for the next two or three months. We quote \$1.65 to \$1.70 per 100 lbs. in carloads, and \$1.75 in less than carloads.

**Spelter.**—Spot Spelter is held to-day at 6.10c. to 6.15c., St. Louis, equal to 6.22 1/2c. and 6.27 1/2c., Pittsburgh. The market is very firm.

**Connellsville Coke.**—The car supply in the Connellsville region is better and there is also a full supply of water, which allows the plants to run to full capacity. The output of Coke continues very heavy, and out of 22,703 ovens in the Connellsville region 21,178 are active and only 1525 idle. The total output in the Upper and Lower Connellsville regions last week was over 300,000 tons. The supply of Furnace Coke for prompt shipment is larger and it is held at \$2.50 to \$2.75 a ton at oven. Connellsville 72-hour Foundry Coke brings \$2.50 to \$2.75 a ton at oven on contracts. Should the present enormous output of Pig Iron continue all records for Coke production will be broken this year.

**Iron and Steel Scrap.**—An item of interest in the Scrap trade is the sale of 15,000 tons of Heavy Melting Scrap by the Lackawanna Steel Company to the Carnegie Steel Company for delivery to its works at Sharon, Pa. The price is understood to have been \$16.50 to \$16.75, delivered. The general Scrap trade continues somewhat quiet, but inquiries in the last few days have been better. Prices continue fairly firm, but unless a buying movement soon sets in it is not unlikely Scrap may go somewhat lower. We quote: Heavy Melting Stock, \$16 to \$16.50; No. 1 Wrought Scrap, \$17 to \$17.50; Cast Iron Borings, \$10.75 to \$11; Busheling Scrap, \$15 to \$15.25; Wrought Iron Turnings, \$13.50 to \$14; Steel Rails, short pieces, \$16 to \$16.50; Iron Car Axles, \$23 to \$24; Steel Car Axles, \$19.50 to \$20, in gross tons.

Bole, Ross & Co., Lewis Building, Pittsburgh, dealers in Pig Iron, Iron and Steel Scrap, Coal and Coke, have been succeeded by Bole, Ross & Co., Incorporated, a corporation. John C. Bole is president and treasurer, Joseph F. Ryan, secretary, and Henry A. Ross, vice-president and general manager.

The offices of the Pittsburgh Valve, Foundry & Construction Company, engineer, founder, pipe fitter and machinist, have been removed from Fifth street and Duquesne Way to the works, Twenty-sixth street and Allegheny Valley Railroad, Pittsburgh.

W. A. Merrifield, for many years connected with the Stover Mfg. Company, Freeport, Ill., has become general manager of the Challenge Wind Mill & Feed Mill Company, Batavia, Ill.

W. J. Curley has been appointed night superintendent of the North works of the American Steel & Wire Company, Worcester, Mass., and W. O. Smith, formerly yard superintendent of the South works, has been placed in charge of the flat wire department of the North works.

## Cleveland.

CLEVELAND, OHIO, January 24, 1905.

**Iron Ore.**—There has been some rather heavy buying of Iron Ore during the past two weeks, and especially during the past week. The buying is heavier than it was a year ago, and is more like some of the more active times in Iron Ore during the past two years. Prices range about 50c. to 60c. higher than they were last year. Operating officials of lines having terminals at Lake Erie docks make the assertions that no improvement of dock facilities will be made this year to take care of any increase in the Ore movement. They are inclined to the belief that present facilities more than meet the requirements with the possible exception of some changes which may be necessary in yards adjacent to the Ore docks, where some enlargement is desirable. Neither producers nor the transportation companies therefore expect a record breaking year in Ore. The prices which are being paid on Ore at present range are about as follows: Bessemer Old Range, \$3.75; Bessemer Mesaba, \$3.50; non-Bessemer Old Range, \$3.25, and non-Bessemer Mesaba, \$3, all f.o.b. Lake Erie docks. It is seen by this that there is not much of a tendency to give a wide differential between the Old Range and the Mesaba Ores. There is no talk of reforming the old Ore Association, since the producers say that as long as there is a good demand at steady prices there is no need for the association.

**Pig Iron.**—Northern Foundry Iron is a little soft, influenced by the conditions which usually exist at this time of the year, when buying is light and furnaces are willing to make small concessions to keep the buyers in a mood to cover their needs. Northern No. 2 has sold to a limited extent this week at \$16 at the furnace both for spot shipment and on delivery through the remainder of the first half. The Southern furnaces are not doing much here except to sell to those who need their Iron for mixtures. One concern sold 1000 tons in this territory the latter part of last week. One lot of 500 tons went at \$13.50, Birmingham, for No. 2, and the other lot of 500 tons went at \$13.75, Birmingham. There is a shortage of Bessemer Iron here for small consumers. This is shown by the fact that one of the local furnaces having some Iron to sell obtained \$16.50 at the furnace for it. The Coke situation is much easier than it has been. The Connellsville prices have eased off a good deal, with 72-hour Foundry Coke selling at \$3 at the oven and Furnace Coke selling at \$2.75 at the oven, although some sales have been reported as low as \$2.50 at the oven for Furnace Coke, while one or two sales have been made at \$2.60.

**Finished Iron and Steel.**—The mills are finding that they cannot produce Bar Iron for any less money at the ruling price of Scrap. Only those who have absolute need of Bar Iron are buying it at the current prices of 1.65c. to 1.70c., Youngstown. All others are buying Bar Steel. This state of affairs has almost left many of the Bar Iron producers without business and they are running hand to mouth at best, with shutdowns threatened. There is a considerable demand for Light Rails, with prices steady. The local buyers have been covering their needs at the following prices: 25 to 45 lb. Rails, \$23; 20-lb. \$25; 16-lb., \$26; 12-lb., \$28. The sheet trade seems to be about on an even keel. There is no contention over prices, but very little contract buying. The building industry does not yet seem to open up very well in this territory for this year and the outlook is anything but bright. There is, however, a fair demand for Structural Material. The Plate trade is dull as to new contracts, but strong as relating to specifications against old contracts. In fact, in nearly all lines, except principally Bar Iron and Sheets, the question of shipment is the most bothersome one. The demand for Billets is still strong, with prices on Bessemer and Open Hearth 4 x 4 ranging \$26 to \$27, Pittsburgh. One of the reports that are coming in says that some of the Nut and Bolt works throughout northern Ohio are planning to put on a night shift to take care of the business, while all finishing mills report more business than they are able to take care of with their present force.

**Old Material.**—The Scrap market is inclined to weakness. Consumers are buying sparingly and are inclined to try to break the market. So far they have not succeeded, except in isolated cases where the dealers have a supply on hand and are forced to sacrifice a few cars for the sake of yard room. The efforts of the Bar Iron makers to cut down the cost of production is one factor, although there is quite as much pressure on the price of Cast Scrap. The market here seems to be under the impression that Scrap prices have gone too far in the matter of advances. With a few slight changes the prices hold as they have been, the understanding being that on occasions these prices may be beaten. We quote, all gross tons: Old Steel Rails, \$16 to \$16.50; Old Iron Rails, \$24; Old Car Wheels, \$17; Heavy Melting Steel, \$16 to \$17. All net tons: Cast Borings, \$8; No. 1 Busheling, \$15; No. 1 Railroad Wrought, \$19 to \$20; Iron Car Axles (nominal), \$20 to \$21; No. 1 Cast, \$14.50; Stove Plate, \$11 to \$12; Iron and Steel Turnings and Drillings, \$12.50 to \$13.

## Philadelphia.

FORREST BUILDING, January 24, 1905.

Notwithstanding somewhat unsettled conditions, the Iron and Steel markets maintain a remarkably firm undertone. The demand for everything except Scrap is active enough to prevent any recession in prices and in several lines there is a distinct hardening. Pig Iron is not quotably dearer, but there are very few sellers at the inside figures, while some ask more than outside rates, and in a few instances they got what they asked. Steel is stronger and, in fact, all the way through the list the demand is such that sellers feel warranted in holding for market rates. Considering the season this is rather unusual, and is taken as an indication of an extremely active market later on. The fact that there is no dullness in midwinter confirms the impression that the spring and summer months will develop the greatest consumption on record, which of course means satisfactory, although not necessarily high, prices. A consumption at the rate of 20,000,000 tons of Pig Iron per annum will be pretty sure to hold prices at their present level, and a consumption beyond 20,000,000 tons would be likely to stiffen them, according to the increase. Under present conditions it looks like a very safe 20,000,000 tons, a probable 500,000 tons beyond that and a possible 21,000,000-ton consumption during the year upon which we have now entered. Still, when it is remembered how far astray good guessers were last year, it is with some diffidence that any estimate is made in actual figures, although the outlook this year appears to be much clearer than during the one preceding, so that estimates may perhaps be somewhat safer. In any event confidence is strong, and the amount of business in sight is certainly very encouraging. It is not unlikely that next week, or at least within two or three weeks more, prices will be distinctly better, for the reason that they are steady on a comparatively dull market, and are therefore likely to be higher on increased activity, although something will depend on the showing of the furnace report due on February 9.

**Pig Iron.**—Business during the week has been in rather large volume, although on the surface the appearance of things was rather quiet. Some large lots were taken, but so quietly that sales were not generally known, consequently the week's business was larger than has been generally supposed. Prices have not changed materially, and the same features prevail to-day as during the past two or three weeks. Foundry and Steel making Irons are well taken up at unchanged prices, but the lower grades are still in rather large supply, and relatively speaking are not so strong. The reason for the excess supply is said to be because of the inferior Coke, which made it impossible to get as large a proportion of Foundry Iron, much of the product being Gray, Mottled or White Iron. The furnaces are doing better now, and are expected to be in a normal condition in course of a week or two. Buying is not quite as active as it was some time ago, but it could not be so without danger to the entire market. Furnaces are sold from four to six months ahead, and to go further than that would be taking the risk of being unable to make their deliveries, and as buyers are obviously pretty well protected against any sudden advance, it is a good thing all round that there should be a slackening up until it is seen where we are at. Much will depend on the next monthly furnace report, as it will give a fairly correct idea both in regard to production and consumption. Some are a little disposed to call the market easier, and while it cannot be said to be distinctly stronger, it is certainly not weak, and is, in fact, just about what our December reports said it would be. Prospects in regard to the immediate future show no good reason for changing the opinions then expressed—viz., steadiness at about to-day's prices until there were clear and distinct indications of some change in the underlying conditions. This can only be shown by an excess of production or an increase in consumption. To-day's prices for Philadelphia and nearby deliveries remain as last quoted—viz.:

No. 1 X Foundry.....	\$17.75 to \$18.00
No. 2 X Foundry.....	17.50 to 17.75
No. 2 Plain.....	16.75 to 17.00
Standard Gray Forge.....	15.75 to 16.00
Ordinary Gray Forge.....	15.25 to 15.50
Basic.....	15.00 to 15.50
Low Phosphorus.....	20.00 to 20.25

**Steel.**—The demand is good enough, but specifications are not nearly as prompt as they ought to be, and to that extent the situation is not satisfactory. Prices are firm, however, and \$25, at mill, is a very inside figure for the best class of business, and from that upward for smaller orders.

**Muck Bars.**—The market is a shade easier than it was a few days ago, although about \$29, f.o.b. sellers' mill, would be paid for good Neutral Bars. Sellers ask a little more than that, but buyers are inclined to hold off until they see what Pig Iron is going to do.

**Plates.**—The demand has not been quite as active during the past week, neither have specifications been made as manufacturers could desire, but there is quite a good batch of day to day business, so that the mills are pretty well employed. Prospects appear to be favorable and no uneasiness



ness is felt as to the final outcome. Prices unchanged as follows:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel, over 14 inches wide.....	1.63½	1.68½
Tank, Bridge and Boat Steel, rectangular Plates, 14 inches wide and under.....	1.53½	1.58½
Flange or Boiler Steel.....	1.73½	1.78½
Marine, A. B. M. A. and Commercial Fire Box Steel.....	1.83½	1.88½
Still Bottom Steel.....	1.93½	1.98½
Locomotive Fire Box Steel.....	2.13½	2.18½
The above are base prices for ¼-inch and heavier. The following extras apply:		
3-16-inch thick.....	\$0.10	per 100 pounds extra.
Nos. 7 and 8, B. W. G.....	.15	"
No. 9 B. W. G.....	.25	"
Plates over 100 to 110 inches.....	.05	"
Plates over 110 to 115 inches.....	.10	"
Plates over 115 to 120 inches.....	.15	"
Plates over 120 to 125 inches.....	.25	"
Plates over 125 to 130 inches.....	.50	"
Plates over 130 inches.....	1.00	"

**Structural Material.**—There are no new features in this department. Business is fairly active with good prospects for improvement, as the season advances. Prices unchanged as follows: Beams, Channels and Angles, 1.63½c. to 1.75c., according to specifications, and small Angles, 1.55c. to 1.60c.

**Bars.**—This end of the Iron trade is in very good shape, as was shown at the meeting of the Eastern Bar Iron Association, which was held in New York last week. The popular feeling was to make two-tenths advance, but as some objections were made, it was decided to take no action, each mill to make its own price. As most of the mills were getting a tenth to two-tenths above the official quotation, it was no hardship to let it remain that way, so that it is an open market, although as a matter of fact 1.63½c. to 1.73½c. seems to be the range for Refined Bars, price according to quality and quantity. Steel Bars nominally unchanged at 1.53½c., but most of the business is done at a higher figure.

**Sheets.**—Good demand at better prices. Mills are now running very full and are getting good specifications.

**Old Material.**—There is a decided dullness in Old Material. Buyers have reduced their bids and from present appearances they are likely to carry their point. Sales have been made at \$17.50 for first-class Steel Scrap, but holders ask \$18 and seem unwilling to go much below that, although they are undoubtedly anxious for business. It is a waiting market, however, and it is hard to say how low holders will go to secure business, but at the moment buyers have the turn in their favor. To-day's bids and offers would be about as follows:

Old Steel Rails.....	\$17.50 to \$18.00
No. 1 Steel Scrap.....	17.25 to 17.75
Old Steel Axles.....	20.50 to 21.50
Old Iron Axles.....	23.50 to 24.00
Old Iron Rails.....	23.00 to 24.00
Old Car Wheels.....	16.00 to 16.50
Choice Scrap, R. R. No. 1 Wrought.....	21.50 to 22.50
No. 1 Yard Scrap.....	19.50 to 20.50
Machinery Scrap.....	16.00 to 16.50
Low Phosphorus Scrap.....	21.00 to 22.00
Wrought Iron Pipe.....	17.00 to 18.00
No. 1 Forge Fire Scrap.....	17.00 to 18.00
No. 2 Forge Fire Scrap, Ordinary.....	12.50 to 13.00
Wrought Turnings.....	14.50 to 15.00
Wrought Turnings, Choice Heavy.....	16.00 to 16.50
Cast Borings.....	11.25 to 11.75
Stove Plates.....	13.75 to 14.25

E. B. Leaf & Co., Philadelphia, who are well known in the Old Material trade, have opened a Pig Iron department, which is to be under the direction of S. H. Baird, late with Pilling & Crane.

**The Rogers Locomotive Works Absorbed.**—Official announcement is made that the American Locomotive Company, New York, has acquired the Rogers Locomotive Works, at Paterson, N. J., by the purchase of the entire capital stock of the latter company. The announcement is not surprising in view of the fact that the American Company had several times before attempted to get control of the Rogers Works. At the present time all the plants of the company are in full operation, and the necessity for increased capacity is the reason given for the taking over of the additional property, which the new owner intends to enlarge and improve in order to increase the output. With the Cooke Locomotive Works, which it already controls, the acquisition of the Rogers Works gives the American Locomotive Company two plants in Paterson and concentrates in its management practically all of the important locomotive building plants in the country, with the exception of the Baldwin Locomotive Works, Philadelphia. For the present the two Paterson works will remain under their respective managements, but in the near future it is likely that one superintendent will direct the work at the two plants. The rumor that the Cooke Works is to be abandoned is denied.

## New York.

NEW YORK, January 25, 1905.

**Pig Iron.**—While there have been no sales of any magnitude in the metropolitan district, quite a number of round lots of Foundry Iron have been placed in some of the Connecticut towns at current prices. In Massachusetts the settlement of the cotton mill strike has led to greater interest on the part of works which supply the mills with machinery. Some Southern Iron, which has been little heard of lately, has also made its appearance, but generally speaking the principal difficulty with Southern makers has been to make promised deliveries. Prices remain unchanged and firm, as follows: Northern Iron, at tidewater, \$17.75 to \$18 for No. 1 X Foundry; \$17.25 to \$17.50 for No. 2 X Foundry and \$16.75 to \$17 for No. 2 Plain. Alabama and Tennessee Irons are quoted at \$17.50 to \$17.75 for No. 1 Foundry and \$17.25 to \$17.50 for No. 2 Foundry.

**Steel Rails.**—During the past week two New England roads have placed between 55,000 and 65,000 tons of Standard Rails, the greater part of the business going to the Lackawanna mill. A minor Coal road has also placed 4500 tons. The Baltimore & Ohio order has not yet been awarded. We quote \$28 at mill for Standard Rails and \$23 to \$24.50 for Light Sections.

**Cast Iron Pipe.**—The Warren Foundry & Machine Company, 170 Broadway, New York, has been awarded the contract for the 11,000 tons of Straight Pipe for the Brooklyn high pressure salt water service. This is a very important contract, as the specifications are unusually rigid. The general situation is quiet, with no large lettings immediately in sight in this territory. The foundries are actively at work on old contracts. Carload lots are firm at \$26.50 to \$27 per net ton for 6 and 8 inch, at tidewater.

**Finished Iron and Steel.**—The American Bridge Company has completed its usual semiannual canvass of the Structural trade in all sections of the country, and reports that about 90,000 tons of railroad bridge work is imminent, of which about one-half will be placed within the next three months, while the remainder will depend upon financial arrangements, but undoubtedly will eventually develop into actual work. The company has also ascertained that from 500,000 to 600,000 tons of building work are on architects' boards, but it is uncertain whether very much of this will come out at an early day. The figures given do not include any municipal undertakings, such as the new Manhattan Bridge over the East River, which will assuredly come on the market in the spring and will require at least 50,000 tons. Advices from local sources indicate that while a great deal of residence work will be done by the building trades this year, very few office or hotel buildings will be undertaken. The permits for large buildings in this city have been fewer within the past six months than in any year since 1896. Influenced by this condition of affairs, the housemiths have withdrawn their demand for \$5 a day and will continue to work for their old wages of \$4.50. The tonnage of Structural work placed within the past week has been quite light. The other lines of Finished Iron and Steel have also been comparatively quiet, but prices are firmly held. Quotations at tidewater are as follows: Beams, Channels, Angles and Zees, 1.64½c. to 1.80c.; Tees, 1.69½c. to 1.80c.; Bulbs, Angles and Deck Beams, 1.74½c. to 1.85c.; Sheared Plates, in carload lots, 1.64½c. to 1.75c. for Tank, 1.74½c. to 1.90c. for Flange, 1.84½c. to 2c. for Marine, 1.84½c. to 2.50c. for Fire Box, according to specifications; Refined Bar Iron, 1.64½c. to 1.69½c.; Soft Steel Bars, 1.54½c. to 1.64½c.

**Old Material.**—The demand for rolling mill stock has fallen off sharply and dealers are receiving offers considerably under those at which purchases were freely made last week. The Steel works are also cutting down their inquiries, and bids for Melting Scrap are considerably under former prices. At the same time the foundries are buying Cast Scrap a little more freely and prices show a slight stiffening. Despite the change in the attitude of buyers of rolling mill and Steel Scrap, the stocks held are so light that those who place small orders urge shipments to be made as quickly as possible. Quotations per gross ton, New York and vicinity, are approximately as follows:

Old Iron Rails.....	\$21.50 to \$22.50
Old Rails, rerolling lengths.....	16.00 to 17.00
Old Steel Rails, short pieces.....	15.50 to 16.50
Relaying Rails.....	20.00 to 21.00
Old Car Wheels.....	17.50 to 18.50
Old Iron Car Axles.....	22.00 to 23.00
Old Steel Car Axles.....	19.00 to 20.00
Heavy Melting Steel Scrap.....	15.50 to 16.00
No. 1 Railroad Wrought Scrap.....	19.00 to 20.00
No. 1 Yard Wrought Scrap.....	18.00 to 18.50
Iron Trunk Scrap.....	17.00 to 17.50
Wrought Pipe.....	14.00 to 15.00
Ordinary Light Iron.....	10.50 to 11.50
Cast Borings.....	8.50 to 9.00
Wrought Turnings.....	11.50 to 12.50
No. 1 Machinery Cast.....	15.50 to 16.50
Stove Plate.....	13.00 to 13.50

George Schuhmann, general superintendent of the Reading Iron Company, Reading, Pa., has been appointed general manager.

## Metal Market.

NEW YORK, January 25, 1905.

**Pig Tin.**—Spot metal is still scarce here, and as a result the price has continued to creep up. To-day's storm will doubtless hinder expected arrivals, but there is an ample quantity afloat to relieve the scarcity within the next two weeks. Quotations are being made, in fact, on Tin for delivery at the end of this month at a discount from existing spot prices. Demand is very quiet, and the market is devoid of any special features. Spot is quoted to-day 29.37½c. to 29.75c.; January is quoted 29.25c. to 29.65c.; February, 28.70c. to 29c.; March, 28.50c. to 28.90c., and April, 28.37½c. to 28.75c. The London market shows a decline as compared with last week's, quotations being cabled to-day £130 15s. for spot and £130 5s. for futures. The arrivals thus far this month amount to 2275 tons, and about 3831 tons are afloat. The Banca sale will be held in Holland to-morrow, and about 1950 tons will be disposed of.

**Copper.**—The market is extremely quiet and, in fact, dull. There is very little demand from consumers and prices are kept unchanged. They are as follows: Lake, 15.25c. to 15.37½c.; Electrolytic, 15.12½c. to 15.25c.; Casting, 14.87½c. to 15c. The London market shows a decline as compared with last week, quoting to-day as follows: Spot, £67 15s.; futures, £67 17s. 6d.; Best Selected, £71. The last named shows a decline of £1 10s. as compared with last week. The exports so far aggregate 15,850 tons, showing a decrease.

**Pig Lead.**—The American Smelting & Refining Company treated the trade on Monday to a surprise by announcing a reduction of \$3 per ton on "shipment" Lead. This company now quotes Desilverized in 50-ton lots at 4.45c. Spot Lead is quoted here 4.45c. to 4.55c. St. Louis telegraphs 4.50c., and London cables announce £12 12s. 6d.

**Spelter.**—A slight decline in prices is to be noted. Spot Spelter was quoted at the close at 6.20c. to 6.30c. The St. Louis market is unchanged at 6.15c. London cables show no change, quoting £24 17s. 6d.

**Antimony.**—Prices are unchanged, and the market closed with Cookson's ruling at 8.50c. to 9c.; Hallett's at 8.50c. to 9c. and other brands at 7.50c. to 8.12½c.

**Quicksilver.**—The London market is a shade lower and was quoted to-day at £7 12s. 6d. The market here is firm and unchanged, flasks of 75 lbs. being quoted at \$40.

**Nickel.**—Business is of about the usual proportions and prices are without change, large lots being quoted at 40c. to 45c. and smaller quantities at 50c. to 60c.

**Tin Plates.**—The mills are maintaining their prices firmly and all the plants are in active operation. The American Sheet & Tin Plate Company quotes on a basis of \$3.74 a box for 14 x 20 100-lb. Coke Plates, f.o.b. New York, or \$3.55, f.o.b. Pittsburgh. The Welsh market is unchanged at 12s. 4½d., f.o.b. Swansea.

**Advance of Copper Sheet and Rod Prices.**—On Thursday, the 19th inst., the members of the Sheet Copper Manufacturers' Association met in New York and decided upon an advance in prices of Sheet Copper. The base price has been changed from 18c. to 19c. The recent advances in the price of Ingot Copper and the improved condition of business generally are ascribed as reasons for the advance. While not being done by concerted action as in the case of Sheet Copper we understand that the prices of Copper Rods and Wire have also been pretty generally advanced. The largest producing interests have placed their prices up ½c. per lb. Although some manufacturers of Brass may have advanced their prices due to the increase in Ingot Copper, the principal producer has not as yet made any change.

**To Standardize Farm Wagon Wheels.**—The National Wagon Manufacturers' Association is engaged in an important move looking to the standardization of wagon parts, particularly wheels. Where to-day the manufacturers are making from 15 to 20 different heights of wheels, involving the carrying in stock of a very great variety of both wood stock and tire stock, the association has suggested the reduction of wheels to the following three standards: High or standard wheels, 44 inches front, 52 inches rear; medium wheels, 40 inches front, 48 inches rear; low wheels, 36 inches front, 44 inches rear. These three heights are thought to be practicable for use everywhere in this country. They also permit the use of the same gears, the bolsters being properly leveled up in using any of the three heights of wheels. This has an important bearing on the tire proposition, as to-day it is necessary for manufacturers of tires to provide for at least 60 different widths, gauges and lengths of tire stock for farm wagons alone, and the standardization of wheels will effect great economy in the manufacture and marketing of tire stock. The farmer is no less benefited than the manufacturer, as the standardization of wheels will be of the greatest convenience in interchanging repair parts.

## The Machinery Trade.

NEW YORK, January 25, 1905.

General conditions remain unchanged. Business is good in all lines, though the improvement in demand this month in certain branches of the trade may not have been as great as was anticipated. Faint expressions of disappointment can be heard here and there, but on the whole reports are very good. The developments this month have not been such as to warrant widespread discouragement, for in many quarters indications have pointed directly toward the improvement in trade which is generally expected this year. It is too early in the year to show symptoms of "cold feet," particularly in view of the considerable increase in business which is already to be noted. The pessimists are few, however, and those in the trade who take the opposite view speak of some very large propositions upon which they are working, and which they believe will soon be closed.

Several months ago we noted that the Niles-Bement-Pond Company has secured an entire floor of the new Trinity Building on Broadway for its offices. We now learn that about May 1, when the company moves its offices it will also abandon its salesrooms at 136 Liberty street. Col. R. C. McKinney, president of the company, advises us that this will mean the abandonment of a New York salesroom entirely. This is a very interesting move, in view of the oft repeated question, "Does a machinery salesroom pay?"

### Advance in Price of Leather Belting.

At a meeting of the Leather Belting Manufacturers' Association of the United States, held in New York, January 18, it was resolved to advance the price of leather belting 15 per cent. This advance pertains to all styles and sizes of leather belting, and it became operative immediately upon the adoption of the resolution referred to. The list prices remain unchanged, but the advance will be effected through change of discount. About 95 per cent. of all of the leather belting manufacturers in the country was represented at the meeting, either by a personal representative of the company or by a letter ballot in favor of the advance. The change in price was made as a result of recent advances in the prices of hides, which show an increase of from 2 to 4 cents within the last year. The increased demand for leather occasioned by the war in the Far East has brought about a scarcity of hides for belting purposes, and it is believed that further advances in the price of hides are in prospect. The action of the leather belting manufacturers on the 19th inst. marked the first change in the price of leather belting by concerted action of the manufacturers since November 12, 1901.

The Coffin Valve Company, Boston, Mass., has placed orders for a large number of machine tools to be used in new additions to its plants with the Prentiss Tool & Supply Company of this city, Boston and Buffalo.

### Prospective Purchases.

The directors of the Pennsylvania Railroad Company have approved an appropriation of \$450,000 for the improvement of the company's shops at Renovo and Olean. The company will expend \$150,000 for additions to the store-rooms, machine and locomotive repair shops at Renovo, Pa., and \$300,000 will be expended on improving the shops at Olean, N. Y. At the latter point the company has already spent a large sum of money in improvements which are now under way and for which machinery is now being delivered. A large portion of the above allowances will be used in buying machinery and tools for the shops. The lists are now in the hands of Theodore N. Ely, chief engineer of motive power, and as soon as approved by him will be passed to the purchasing department, from whence specifications will be issued to the trade.

The Virginia Electric & Mfg. Company, Petersburg, Va., is now completing the details of organization and will soon begin work upon the preparation of plans for a new plant. We are advised by Louis Paulero, manager, that all kinds of automatic machinery suitable to the manufacture of electrical appliances will be purchased.

The Kennedy Valve Mfg. Company, Coxsackie, N. Y., is having plans prepared for the enlargement of its plant. These have not progressed sufficiently, however, to determine upon the kind or quantity of new machinery and mechanical appliances to be installed. T. C. Flinn, the superintendent of the plant, is in charge of the new works.

The Coosa Pipe & Foundry Company, Gadsden, Ala., intends erecting a plant for the manufacture of cast iron soil pipe and fittings from 2 to 12 inches in diameter, and the main building will be 125 x 325 feet, with wings for machine shop, engine room, tumbling department and fitting rooms. A 72-inch cupola will be installed and the machine shop will be equipped throughout with new and modern machine tools. Two 75 horse-power boilers and one 100 horse-power engine will be installed to run the machinery and shafting in the foundry. No purchases of equipment have as yet been made, but the company is receiving proposals at this time. M. W. Bush, general manager, is in charge of the works.

The Halcomb Steel Company has been organized, all



stock subscribed for and a committee consisting of F. R. Hazard, C. H. Halcomb and L. C. Smith is looking for a location and is ready to decide whenever the proper location in Syracuse, the city selected, can be found. The architects and engineers are about to commence work upon the plans of the buildings. Equipment has not been purchased, but will be soon. It is expected that the mill will be running by late fall of the present year.

The Mountain City Foundry & Machine Company, Greenville, S. C., will shortly be incorporated and erect a plant for general repair work and the manufacture of steam specialties. The company is now in the market for a small planer and boring mill. Wm. G. Gregory is at present at the head of the company.

#### Printing Machinery Manufacturers Consolidate.

The United Printing Machinery Company has recently been incorporated to take over the business of the Tynpaly Company of Boston, the Williams-Lloyd Machinery Company of Chicago, the Lovejoy Company (machinery department) of New York and the Fullard Machine & Press Company of Plainfield, N. J. George F. Willett of Boston is president and H. L. Bullen of New York is general manager. Its addresses are: Chicago, 337-339 Dearborn street; New York, 132 Nassau street (temporary); Boston, 246 Summer street. It operates factories in Chicago, Boston and Plainfield, making a complete line of machinery for stereotyping, electrotyping and process engraving, feeding machines, printing presses and folding machines. The company makes and sells a newly patented printing plate, and is the exclusive selling agent for the sorts casting machine, a new invention patented and made by the National Compositype Company of Baltimore.

#### Business Changes.

Announcement is made by the Colorado Iron Works Company, manufacturer of ore smelting equipments and milling machinery, Denver, Col., to the effect that John E. Rothwell has succeeded F. W. Hopkins as chief of sales department. Mr. Rothwell has been associated professionally in the construction and operation of a number of important metallurgical plants in the Rocky Mountain region in the last two decades, and has been employed in a professional capacity by the Colorado Iron Works Company for the past three years.

Edward Van Winkle announces that he will continue the engineering business of Pratt & Van Winkle, formerly of 160 Fifth avenue, New York, in the Flatiron Building, Broadway, Fifth avenue and Twenty-third street, New York, while Charles R. Pratt, his former associate, has retired from practice and is devoting his entire time to the interest of the Pratt Elevator Safety Company.

The firm of A. L. Ide & Sons, manufacturers of the Ideal engine, with works and general offices at Springfield, Ill., has opened a New York office at 11 Broadway, under the management of J. G. Robertson. All of the export, New England and Middle States business will be transacted through this office.

The McDonald Bros. Company, Cleveland, Ohio, and Worcester, Mass., has incorporated under Massachusetts laws. The incorporators are James J. McDonald, Jefferson, Mass.; Stephen F. McDonald, Cleveland, and William F. McDonald, Detroit. The company conducts an engineering business and is the exclusive agent for the Paul steam system in the southern peninsula of Michigan, the State of Ohio, and the cities of Newport and Covington, Ky.

The Geometric Drill Company, New Haven, Conn., manufacturer of special machinery and tools, has incorporated under Connecticut laws as the Geometric Tool Company with a capital stock of \$100,000.

The Allis-Chalmers Company opened new sales offices in Philadelphia on January 1 in the Land Title Building. The offices heretofore maintained by the electrical department of the company, the Bullock Electric Mfg. Company, in the North American Building, have been removed also to the Land Title Building, where they have been consolidated with those of the parent company. The new offices are under the charge of W. A. Wood, who will look after each of the interests of the company. These interests include the power department, the electrical department, pumping engine department, hydraulic department, saw mill machinery department, flour mill machinery department and others which produce rock crushing machinery, cement making machinery, wood preserving machines and plants, mine hoists and machinery of all other kinds for mining and recovering gold, silver, copper and other metals.

The strike of the structural steel workers at Boston has been ended by a compromise agreement, by which the men will receive 47½ cents a hour for an eight-hour day. They demanded an increase from 45 to 50 cents an hour. The George A. Fuller Company is continuing work on the Siegel-Cooper building with its union men, and the strike of the Roebling Construction Company has been ended on a similar basis. No other builders were affected.

## Government Purchases.

WASHINGTON, D. C., January 24, 1905.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until February 21 for a quantity of supplies for the Mare Island and Puget Sound navy yards, including one beveled band saw machine, steel plate gate shear, drill press, crank shaper, screw cutting lathe, &c.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until February 14 for the following machine tools for the Mare Island and Puget Sound navy yards: Schedule 41, pneumatic drill and boring machine; schedule 42, band saw, bed surfacer, precision lathe, planer, boring and turning machine, filling machine, radial drill press, electric forge, bench grinder, arbor and mandrel press, sheet metal worker's shear, dado machine, &c.

G. B. Spearin, representing Spearin & Preston, contractors, of Battery place and West street, New York, has been awarded the contract for constructing the new dry dock at the New York Navy Yard at his bid of \$773,292. This is the second time that Mr. Spearin has been the lowest bidder for the work. After he had been awarded the contract the first time at \$673,292 he discovered that a mistake had been made in figuring, and so informed the Navy Department, which required Mr. Spearin to surrender his certified check for \$25,000, and readvertised the work. Mr. Spearin is now trying to secure the return of the check which he deposited with the Navy Department at the time of sending in his first bid.

The machinery needed by the Isthmian Canal Commission includes: Class 12, three 600-pound steam hammers; class 13, three 24-inch engine lathes, three 16-inch engine lathes, three 10-inch and one double axle lathe; class 14, two 42-inch planers; class 15, two universal mill machines; class 16, one 42-inch car wheel boring machine; class 17, one driving wheel press for wheels; class 18, one universal trimmer; class 19, one 2-inch triple bolt cutter and two double bolt cutters; class 20, one 2-inch four-spindle nut tapper; class 21, one Acme bolt header; class 22, three No. 1 wet emery wheel grinders; class 23, one No. 5 pipe threading machine; class 24, three twist drill grinders; class 25, one portable cylinder borer; class 26, one 51-inch boring machine; class 27, one No. 3 automatic railway cut off saw; class 28, one type 10 air compressor.

The Constructing Quartermaster at Portland, Maine, will receive bids until February 15 for a steam pump to be installed in the pump house at Fort McKinley, Maine.

The Commissioners of the District of Columbia will receive bids until February 6 for coal and ash handling machinery for the sewerage pumping station at Washington.

Sealed proposals will be received at the Military Academy, West Point, N. Y., until February 15 for Corliss engines for the electric lighting plant to be installed in this place.

The following bids were opened January 17 for machine tools for the Eastern navy yards:

Bidder 2, American Woodworking Machinery Company, New York; 3, Aumen Machinery & Supply Company, Baltimore, Md.; 5, Alliance Machine Company, Alliance, Ohio; 9, B. F. Barnes Company, Rockford, Ill.; 11, Baker & Hamilton, San Francisco, Cal.; 14, Burke Electric Company, Erie, Pa.; 16, Baird Machinery Company, Incorporated, Pittsburgh, Pa.; 17, Becker-Brinard Milling Machine Company, Hyde Park, Mass.; 18, Brown & Sharpe Mfg. Company, Providence, R. I.; 19, Crane Company, Seattle, Wash.; 21, Crocker-Wheeler Company, Ampere, N. J.; 23, J. W. Cregar Agency, Philadelphia, Pa.; 24, Caldwell Bros. Company, Seattle, Wash.; 33, Cincinnati Machine Tool Company, Cincinnati, Ohio; 40, Dunham, Carrigan & Hayden Company, San Francisco, Cal.; 43, Drew Machinery Agency, Manchester, N. H.; 48, Electric Launch Company, Bayonne, N. J.; 49, Erie Foundry Company, Erie, Pa.; 50, Electric Machinery Company, Minneapolis, Minn.; 52, W. H. Foster Company, New York; 55, Fairbanks Company, New York; 58, Richard W. Geldart, New York; 63, Richard H. Grey, San Francisco, Cal.; 64, Globe Engineering Company, San Francisco, Cal.; 67, General Electric Company, Schenectady, N. Y.; 68, Gas Engine & Power Company and Charles L. Seabury & Co., Consolidated, Morris Heights, N. Y.; 69, Hendey Machine Company, Torrington, Conn.; 71, Holbrook, Merrill & Stetson, San Francisco, Cal.; 74, Harron, Rickard & McCone, San Francisco, Cal.; 76, Handlan-Buck Mfg. Company, St. Louis, Mo.; 82, Jones & Lamson Machine Company, Springfield, Vt.; 92, Montgomery & Co., New York; 93, Manning, Maxwell & Moore, New York; 94, Motley, Green & Co., New York; 95, J. J. McCabe, New York; 96, Manhattan Supply Company, New York; 97, Morgan Engineering Company, Alliance, Ohio; 106, Niles-Bement-Pond Company, New York; 107, New Doty Mfg. Company, Janesville, Wis.; 108, Oliver Machinery Company, Grand Rapids, Mich.; 109, George A. Ohl & Co., Incorporated, Newark, N. J.; 113, Prentiss Tool & Supply Company, New York; 114, Pacific Hardware & Steel Company, San Francisco, Cal.; 115, George Place, New York; 116, Pacific Tool & Supply Company, San Francisco, Cal.; 117, S. W. Price Machinery Company, Norfolk, Va.; 120, Pratt & Whitney Company, Hartford, Conn.; 121, Platt Iron Works Company, Baltimore, Md.; 122, John B. Roache, Brooklyn, N. Y.; 124, Reliance Machine & Tool Company, Cleveland, Ohio; 126, H. A. Rogers Company, New York; 127, J. T. Ryerson & Son, Chicago, Ill.; 129, Smith-Courtney Company, Richmond, Va.; 139, Springfield Machine Tool Company, Springfield, Ohio; 148, Sherman-Brown-Clements Company, New York; 152, George H. Tay Company, San Francisco, Cal.; 154, United Marine Supply Company, New York; 156, Vandyck-Churchill Company, New York; 157, Western Electric Company, New York; 161, S. A. Woods Machine Company, South Boston, Mass.; 163, Henshaw, Buckley & Co., San Francisco, Cal.; 164, Buffalo Forge Company, Buffalo, N. Y.; 168, Holliday-Henshaw-Buckley Company, South Seattle, Wash.

## SCHEDULE NO. 11—BUREAU OF YARDS AND DOCKS.

Class 1. One single head horizontal bolt threading and nut tapping machine—Bidder 3, \$349.10; 16, \$345; 43, \$387.50, \$367 and \$343; 52, \$450; 55, \$485; 93, \$325; 106, \$339; 113, \$359; 124, \$350; 129, \$359.75.

Class 2. One vertical drill press—Bidder 3, \$437.69; 16, \$335; 33, \$486; 55, \$395 and \$415; 93, \$460 and \$350; 95, \$455; 106, \$349; 122, \$500; 129, \$524.

Class 3. One power hack saw—Bidder 3, \$59.81; 55, \$65.55; 92, \$60; 93, \$65; 106, \$55.

## SCHEDULE NO. 12—BUREAU OF EQUIPMENT.

Class 4. Twelve forges, one blower and one exhaustor—Bidder 164, \$5079.80.

## SCHEDULE NO. 13—BUREAU OF NAVIGATION.

Class 5. One improved patent head engine lathe—Bidder 23, \$602; 55, \$736.50; 69, \$852; 93, \$750 and \$687; 95, \$610; 106, \$649; 139, \$625.

Class 6. One slotting machine—Bidder 16, \$925; 55, \$940; 93, \$940 and \$956; 106, \$895; 129, \$942.

Class 7. One Cincinnati Planer Company's metal planer—Bidder 55, \$930; 93, \$800; 106, \$975.

## SCHEDULE NO. 14—BUREAU OF ORDNANCE.

Class 8. One upright drill press—Bidder 3, \$68.30; 9, \$54; 23, \$59; 55, \$83; 93, \$53; 106, \$60; 117, \$60; 126, \$54; 129, \$57.49.

Class 9. One improved turret lathe—Bidder 23, \$1625; 93, \$1225; 106, \$1350; 117, \$1615; 129, \$1226.75.

Class 10. One back geared crank shaper—Bidder 3, \$389.72; 23, \$325; 93, \$310; 95, \$315; 106, \$300; 117, \$310; 129, \$325; 139, \$315.

Class 11. One engine lathe—Bidder 3, \$1065.40; 55, \$955.99 and \$1016.99; 93, \$725; 106, \$1015; 117, \$1050; 129, \$771.50, \$996.50, \$1136.50 and \$1196.50.

Class 12. One improved type engine lathe—Bidder 3, \$926.49; 55, \$889 and \$945; 93, \$625; 106, \$890; 117, \$935; 129, \$626, \$801, \$916, \$958; 139, \$950 and \$1025.

Class 13. One lathe—Bidder 3, \$446.98; 23, \$468; 55, \$413.50; 93, \$435; 106, \$450; 117, \$500; 120, \$545; 126, \$435; 129, \$492 and \$522.

Class 14. One Universal milling machine—Bidder 17, \$985; 18, \$1335.88; 55, \$1300 and \$1475; 93, \$1050; 106, \$1075; 117, \$1100; 129, \$984.95.

Class 15. One Universal saw bench—Bidder 2, \$325; 23, \$270; 106, \$315; 108, \$350; 115, \$224; 117, \$315; 129, \$319.

Class 16. One automatic planer knife grinder—Bidder 2, \$185; 43, \$264; 93, \$285; 106, \$240; 108, \$291; 117, \$250; 129, \$170.50.

## SCHEDULE NO. 15—BUREAU OF CONSTRUCTION AND REPAIR.

Class 17. One electrically driven dry emery grinder—Bidder 96, \$295; 106, \$250.

Class 18. One medium weight motor driven automatic knife grinder—Bidder 106, \$400.

Class 19. One single emery grinder—Bidder 55, \$274; 93, \$260 and \$375; 106, \$300.

Class 20. One pipe flanging and expanding machine—No bids.

Class 21. One molding machine—Bidder 93, \$1200; 106, \$1248; 115, \$985; 161, \$1250.

Class 22. One flat turret lathe—Bidder 52, \$1430; 82, \$1260; 93, \$1225; 106, \$1250.

Class 23. One straight side fly wheel power press—Bidder 106, \$550; 156, \$500.

Class 24. One light draft power launch—Bidder 48, \$2700; 68, \$2475; 94, \$2190.

Class 25. One motor driven outfit for Morgan punching and shearing machine—Bidder 97, \$820; 106, \$550.

Class 26. Two motor drive outfits for combined punching and shearing machines—Bidder 97, \$1120; 106, \$810.

Class 27. One motor drive outfit for Ohl multiple punch—Bidder 106, \$450; 109, \$350.

Class 28. One motor drive outfit for Ohl wide crimping machine—Bidder 106, \$235; 109, \$140.

Class 29. One motor drive outfit for Ohl rotary shear—Bidder 106, \$350; 109, \$347.

Class 30. One motor drive outfit for Ohl power press—Bidder 106, \$440; 109, \$374.

Class 31. One motor drive outfit for Niles plate straightening rolls—Bidder 106, \$675.

Class 32. One 800-pound single frame steam hammer—Bidder 3, \$825; 5, \$960; 16, \$815; 43, \$840; 49, \$825; 55, \$820; 94, \$819; 106, \$839; 127, \$1035.

## SCHEDULE NO. 16—BUREAU OF STEAM ENGINEERING.

Class 33. One 12 inch by 5 foot tool room lathe—Bidder 69, \$466; 92, \$460, 93, \$455 and \$375; 106, \$425; 120, \$463.50.

Class 34. One 14 inch by 6 foot back geared engine lathe—Bidder 3, \$384.56; 55, \$394 and \$379; 69, \$423; 92, \$410; 93, \$415 and \$360; 95, \$385; 106, \$365; 113, \$462; 120, \$471.75.

Class 35. One 16 inch by 8 foot back geared engine lathe—Bidder 3, \$504.79; 55, \$500 and \$497; 69, \$581; 92, \$510; 93, \$545 and \$482; 95, \$475; 106, \$475; 120, \$521.10.

Class 36. One motor driven polishing and buffing lathe—Bidder 92, \$455; 106, \$431.

Class 37. One double punch and shear—Bidder 43, \$760 and \$720; 106, \$622; 107, \$661.

Class 38. Combination bench and slitting shear, 1 crease swedge, 1 cullender swedge—No bids.

Class 39. One motor drill press—Bidder 93, \$595.

Manning, Maxwell & Moore, New York, have been awarded the following classes under bids opened December 13 for machine tools for the New York and League Island navy yards: Class 3, one 18-inch engine lathe, \$185; class 11, one tool room planer, \$430; class 16, one sliding head drill press, \$145; class 17, one 13-inch drill press, \$45.

The strike of the molders and core makers at Worcester, Mass., is still on, but the several foundries affected are running full and without inconvenience. They are now on a strictly nonunion basis. Coming as it did at a time when business was dull, the strike gave the foundrymen ample time to organize under new conditions before the revival of business. The foundries concerned are those of the Reed Foundry Company, the Whitcomb Foundry Company, formerly the Kabley Foundry Company, the Wheeler Foundry and the Colvin Foundry.

## Chicago Machinery Market.

CHICAGO, ILL., January 23, 1905.

The Sanitary District of Chicago, Security Building, is advertising for bids on four 4000-kw., 6600 volt, three-phase, 60 cycle, alternating current generators, 164 revolutions per minute, and two 350-kw., 250 volt, multipolar, direct current, compound wound exciters, 300 revolutions per minute. These machines are to be used in a new power station which is being erected by the district near Lockport, Ill. The generators are to be of the water wheel type with two bearings and the exciters of the water wheel type, provided with a shaft and two self aligning and self oiling bearings. The eight-hour clause is made an imperative part of the contract and bidders must accompany their bids with a check for \$3000 and the winner execute a bond for \$50,000. Bids will close at noon February 15. Details of specifications are given in the official blanks to be secured from the clerk of the district and on which bids must be made.

The South Side Elevated Railway Company, Chicago, has determined upon the erection and equipment of a large supplementary power house to accommodate the greatly increased mileage of its road and the location of the power house has been decided upon, though the officers of the company decline at present to disclose further information. It is known that very large horse-power in boilers and either engines or turbines, as well as generators, will be required. The matter is in charge of Marcellus Hopkins, 47 Congress street, Chicago.

The Flagler Iron & Steel Company, Chicago, has purchased a complete outfit of mining machinery and equipment for developing the newly acquired Kloman iron mine. The equipment, which was purchased from the Lake Shore Engine Works, includes boilers, engines, hoisting machinery, skips and other equipment, and the order calls for shipment of the whole equipment within eight weeks from date of purchase.

The Kellogg Harvester Company, which a year ago purchased or leased the old plant of the Plano Harvester Company at Plano, Ill., will shortly enlarge its plant by the erection of a foundry, 80 x 120 feet, with a 25-ton cupola and other equipments in proportion. It will also purchase a 150 horse-power engine and considerable other machinery. A machine shop, 80 x 300 feet, has recently been completed and the tool equipment will have to be greatly augmented. Offices of the company are in the First National Bank Building, Chicago.

Joseph W. Wood, chief engineer of the city of St. Louis, has submitted to the Board of Public Improvements a plan for erecting a central heat, light and power station to serve the Insane Asylum, the Poor House and the Female Hospital, three buildings which adjoin each other at a distance from each other of from 800 to 1600 feet. Each of these buildings now has its independent plant, and Mr. Wood's plan is to transfer the boilers from all three to the central station and to connect this station with the buildings by means of tunnels containing heating pipe, water pipe, wire conduits and refrigerator pipes, the plan being to furnish refrigeration in summer as well as heat in winter. Mr. Wood is now preparing plans for the installation of two direct current generators, one 100-kw. and the other 50-kw., with direct connected engines for the Insane Asylum.

The Chas. C. Moore Company, San Francisco, Cal., has secured contract for furnishing a new engine and alternator for the Alameda, Cal., municipal electric plant. The engine is a 19 and 32 x 20 Harrisburg crank tandem compound machine and the alternator a 240-kw. National. The price of the former is \$7719 and of the latter \$4888.

The Mackinaw Electric Light Company has been incorporated for \$8000 by Walter Porter, C. G. Sparks and others at Mackinaw, Ill. The company will erect an electric light plant and has purchased the following machinery equipment: An Erie City Iron Works triple riveted boiler, a Bates 140 horse-power Corliss engine, a Fort Wayne alternating dynamo, a Cookson heater and a National Construction Company air pressure water tank.

Charles Hanika, Muncie, Ind., will erect a factory for the manufacture of architectural iron and similar products. The plant, which will cost about \$10,000, will adjoin the stamping works of Ball Brothers' factories. It will be 155 x 205 feet and will be provided with up to date equipment. Ground will be broken for the factory by March 1 and it is the intention that manufacturing operations shall be in progress by September 1.

The Western Iron Works, Incorporated, Los Angeles, Cal., will enlarge its plant so as to build gas, gasoline and oil engines from 5 to 100 horse-power in capacity.

The Marquette County Gas Light & Power Company, Marquette, Mich., is building a complete new gas plant and making extensive changes and repairs in the electric light and street car plants. A new 350 horse-power engine is to be installed.

The Knoxville Traction Company, Knoxville, Tenn., is remodeling its present plant. A 1500-kw. steam turbine has been purchased from the General Electric Company.



The Standard Sanitary Mfg. Company, Pittsburgh, Pa., expects to erect a foundry at its Ahrens & Ott Works, Louisville, Ky. The building proposed will be 120 x 300 feet. Electric cranes and electric motors are required.

The Riverside Iron Works is the name of a new concern in Chicago incorporated by Theodore Kenney, Emil Schlinger and Rudolph Kaufmann. The company, which is incorporated for \$20,000, will conduct a general foundry and machinist business. It is in the market for a 60-inch lathe, 18 to 20 foot bed.

The Chicago branch of Hill, Clarke & Co., machine tool dealers, has been incorporated under the separate name of "Hill, Clarke & Co. of Chicago." The officers of the Chicago company are the same as of the Boston company, except that A. W. Wigglesworth, who has been manager of the Chicago office for a number of years, has been taken into the firm and made treasurer. We are informed that the scope and policy of the new Chicago company will not differ from those of its predecessor.

## The New England Machinery Market.

WORCESTER, MASS., January 24, 1905.

There is a pretty unanimous expression of complete satisfaction with present conditions among the manufacturers of machinery in New England, and the machinery dealers, including those of Boston, are just as well pleased with the volume of their present business and the promise of what is to come. Occasionally a manufacturer is found who says he has not seen as much of the currently reported good business as he would like to, and in certain of the shops more men could be employed. But these are the exceptions. This condition is accentuated by the condition of general manufacturing business. Pretty much every one is very busy, and not a few establishments are working with night shifts.

The machinery dealers and manufacturers are now realizing on their disappointments which came at the beginning of the depression, when inquiries resulted in no business because prospective customers got the retrenchment idea before they came to the buying point. Now many improvements, comprising new machinery installations, are being carried out. A future source of business is in new plants and additions, which will aggregate a large demand for new tools.

The builders of special machinery report conditions as excellent, with a good deal of work already in the shops and inquiries unusually numerous. This is specially true of automatic machinery.

### Worcester's Proposed Industrial Buildings.

A project is under way at Worcester for the erection of large industrial buildings for rental for general manufacturing purposes, and the machinery men look for a nice market for new tools as soon as the first group of buildings is completed, which will be some time this season, unless something happens to disturb the present plans. The Merrifield Buildings Trust has been organized to take over and develop the Merrifield property on Union street and adjacent land, the plan comprising new buildings with an aggregate of 500,000 square feet of floor area. The present buildings on the site have been the birth place of a great number of the important industries of Worcester, having been rented for small establishments for more than half a century. At present there are more than 50 tenants, each operating some sort of manufacturing industry. It is planned to immediately erect two factory buildings six stories high and with a total of 228,000 square feet of floor area, of which 160,000 feet will be available for rental, the remainder being taken up by power plant, corridors, &c. There will be four passenger and six freight elevators. When this building is completed another group will be erected on land now occupied by the principal buildings of the old group, in which most of the tenants are located. This group will contain 240,000 square feet of manufacturing space, with four passenger and five freight elevators. In addition there will be an office building for the use of tenants. Electric power will be used, the present 1000 horse-power engine providing power for the present.

The company is organized after the same general plan as the building trusts which have erected a number of the large mercantile and office buildings of Boston. There will be issued eventually \$625,000 in 20-year, 4 per cent. gold bonds and an equal amount of stock. For the present \$375,000 of stock and an equal amount in bonds will be issued, to acquire the present properties and some adjacent land and to erect the first group of buildings. The property is located near the heart of the city and on the Boston & Maine Railroad.

### Prospective Machinery Purchases.

The Casco Shipbuilding Company, Portland, Maine, states that it will be in the market for considerable machinery in the early spring. The company was recently incorporated under Massachusetts laws with an authorized

capital stock of \$100,000. It will build both steam and sailing vessels. The officers are: President, Charles J. Palmer, Boston; treasurer, William H. Reed, East End Yacht Club, Portland, and clerk, Charles B. Lamont, Boston.

The Elmore Mfg. Company, Southington, Conn., is a new Connecticut corporation which will manufacture carpenters' tools. The company states that it will be in the market for machinery from time to time.

The Worcester Electric Light Company, Worcester, Mass., is in the market for a new battery of 12 boilers, to aggregate 3000 horse-power. The boilers will replace an old battery and will not mean a great increase in power. It is understood that the company will add no new engines nor generators this season.

The Worcester Pressed Steel Company, Worcester, Mass., successor to the Worcester Ferule Mfg. Company, is having plans prepared for a new plant the exact location of which has not been determined, but which will be built early in the season. The company will be in the market for a number of new tools, including a mill to cold roll 12-inch stock, shears to cut 7-foot plates, several heavy presses and a few engine lathes.

The United States Foundry & Sales Company, South Norwalk, Conn., announces that Newton R. Marvin, formerly with the A. A. Griffing Iron Works of Jersey City, N. J., has severed his connection and has taken an interest in the United States Foundry & Sales Company. He has been appointed secretary of the company and will interview the trade in the company's interest.

## The Philadelphia Machinery Market.

PHILADELPHIA, January 24, 1905.

There was somewhat of a lull in the machinery trade in Philadelphia during the past week. Both manufacturers and dealers note a falling off in inquiries, particularly of the kind that mean business. No anxiety, however, is felt as to the ultimate resumption of good business conditions. At this time a quiet market is not unlikely; buyers in many instances are just getting their stock taking rounded out, and plans for purchases have not yet matured. The railroads are preparing to get into the market with specifications for 1905, but it will probably be some little time before they will be ready to make their needs public. Specifications were sent out early in the week for a small lot of tools, but most of the business recently has been of the single tool class. Lathes have been in good demand, some dealers reporting their inability to make deliveries on various sizes of Western tools for 30 to 90 days ahead. There has also been a fair demand for small machine tools, no special tendency toward any one class being particularly noticeable.

The agitation resulting from the possible strike of the trainmen of the Pennsylvania Railroad, it was thought by many, had a tendency to restrict trade for the time, but this has now been avoided by a satisfactory arrangement after conferences between representatives of both interests.

### Projects Requiring Machinery.

The Department of Public Works, Philadelphia, Pa., will receive bids until February 2 for coal handling machinery and pockets for the Lardner's Point Pumping Station.

The Thompson-Starrett Company, contractor, has begun work on a six-story power house, Ludlow below Thirtieth street, for John Wanamaker. The building is to be of fire proof construction, 66 x 90 feet, and the estimated cost is \$130,000.

The Pennsylvania Railroad Company is pushing forward the work on its new shops at Millham Junction, near Trenton, N. J. The buildings at present contemplated are all under roof except the power house, and it expects to have all completed by May 1. Some parts of the plant will be in condition to have tools installed by March 1. It is not considered improbable that an extension of some of the buildings may be ordered in the near future.

The J. G. Brill Company of this city has purchased the car and truck building plant of the John Stephenson Company at Elizabeth, N. J. This latter concern has been a very formidable competitor of the Brill Company in the East. The Stephenson Company will maintain its former name and will manufacture hereafter cars and trucks under the Brill Company patents. W. H. Hulings, Jr., has been elected president of the new company, S. M. Curwen vice-president, James Rawle treasurer and J. G. Roat secretary.

The Schütte & Koerting Company will begin alterations and additions previously mentioned in these columns to its plant at Twelfth and Thompson streets as soon as the weather permits. Final plans for building as well as specifications for machinery have not yet been completed.

The Baldwin Locomotive Works have booked an order for 50 consolidated type freight engines for the Missouri Pacific Railroad as well as a large number of engines of varying types in lots of two or three each. Business is greatly improved with this company and the outlook is very favorable. It is now running double turn in some departments and has increased its number of employees to 11,000.

H. S. Kerbaugh, Incorporated, contractor, 933 Arcade Building, Philadelphia, is asking bids for a number of lathes, drill presses and smaller tools for their plant at Enola, Pa.

The Thomas Devlin Mfg. Company is erecting a new machine shop and warehouse at its Burlington, N. J., plant. The new shops are to be thoroughly fire proof in every detail; the main building will be 432 feet long by 52 feet wide, 280 feet of the length to be two stories high, the remainder one story; two wings, 42 x 50 and 71 x 72 feet, respectively, will connect the new addition to other buildings of the plant. The work of erection is about half completed. Machinery for the new plant, which is nearly all special, will be almost entirely supplied by removal from the Philadelphia plant. What class of machinery is to be supplied the local plant thereafter has not yet been decided.

The Murray Iron Works Company has sold through its Philadelphia office this week a 200 horse-power Murray-Corliss engine to the Grater-Bodly Company, manufacturer of interior wood work, Norristown, Pa. This engine will replace one of smaller capacity.

Wickes Bros., Pittsburgh and Jersey City, have decided to open a branch in Philadelphia. Quarters have been secured on the machinery floor of the Bourse, section T. W. J. Linton will act as their resident manager.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, January 23, 1905.

Machine tool builders as a rule are fairly well satisfied with the manner in which trade is developing, and express themselves in a very sanguine way as to what they anticipate the future will bring forth. Inquiry from domestic points where they have already introduced their tools is far in excess of what it was a year ago, and in addition to this calls are coming from new sections that have heretofore shown very little interest in matters of this kind. The foreign demand is constantly growing stronger. The Japanese have been very active in their demand for lathes of all sizes, so that many of the builders of this class of tools have not only been able to dispose of what stock they had on hand, but have also secured orders for future delivery. Russia is also in the market for our tools, but the strict surveillance of all imports into that country makes it difficult for the American manufacturer to place his product on Russian soil. We learn of one instance that is very pertinent to the point in question, where a manufacturer received an order for ten lathes, instructions being given to take them apart and ship the parts to two distinct seaports, where, upon arrival, they would arrange to assemble them. From thence they were to be forwarded to another part of the interior. Considerable delay and inconvenience is still being experienced by the various shops in securing castings owing to the molders' strike, which, though possibly not so effective as it was several weeks ago, is nevertheless not without its effect in foundry circles. When we made our report last month it seemed almost certain that the city would in a very short time be put to very severe straits on account of the low state of the river, thereby precluding receiving its normal coal supply. This, however, is now changed, the river having risen sufficiently to permit the shipment of an immense tonnage of coal, so that the manufacturing interests are now resting easy along this line.

### Meeting of the American Tool Works Company.

The American Tool Works Company held its annual meeting last week. The report of President Alter shows a very satisfactory condition of affairs. While the past year was far below normal, and trade was not what could be desired, the company paid all fixed charges and added about \$10,000 to its surplus. During the progress of the directors' meeting the question of a change of location was discussed at length, with the result that they decided to remain in their present quarters for the present. The following officers and directors were elected to serve for the ensuing year: President, Franklin Alter; vice-president and general manager, J. B. Doan; secretary and treasurer, Henry Luers; Directors: H. H. Peek, A. B. Voehls and Robert J. Smith. Trade during the month of December is reported to have been much better than the preceding months of the year with the outlook for January very good. Foreign inquiry is developing to a marked degree, and in fact has been a very important factor in the year's receipts.

### Machinery Requirements.

The Cincinnati & Milford Traction Company, whose line now extends from Madisonville to Milford, a distance of 10 miles, will it is said in the early spring begin an extension to Blanchester, 30 miles further northeast. It is at the present time securing power from one of the interurban lines that run into the city, but we are informed that when the line to Blanchester is completed it will establish a power plant of its own. Two generators, engines and boilers with the necessary accessories will be required. The exact details of this equipment has not been definitely decided upon.

Plans have been completed for a new power house of the Wabash-Warsaw Electric Line at Wabash, Ind. The new plant will be built just north of the old power house, and the old plant will be utilized as a supply house and repair shop.

The Ottawa Park Street Railway Company of Toledo has been incorporated with \$10,000 capital.

Sealed proposals will be received by the Board of Public Service of Norwood, Ohio, until 12 o'clock noon, February 18, 1905, for furnishing the water works with two horizontal tubular boilers and one steel smoke stack with breeching. All bids should be addressed to E. R. Edwards, clerk, Norwood, Ohio.

It is understood that the County Commissioners at Bowling Green, Ohio, are contemplating the erection of a power house in that city for the purpose of furnishing light, heat and elevator power for the court house and jail. They are said to have succeeded in raising a fund of \$20,000 for this purpose.

The Lima Locomotive & Machine Company of Lima, Ohio, is reported to be making extensive improvements to its plant on South Main street in that city.

The H. V. Dockray Brass & Iron Company of Zanesville, Ohio, has been incorporated with \$10,000 capital.

Since the molders' strike in this city and Newport, Ky., there has been a great amount of dissatisfaction among the owners of the plants over the river in regard to the protection granted them by the authorities. For this and other reasons they desire to locate in Cincinnati. To this end they have opened negotiations with Wessling Brothers Foundry Company, located at Liberty street and McLean avenue, to purchase the plant. Matters have not as yet reached a consummation, but it is expected that all arrangements will be completed within the next few days.

The Zug Steel Company, composed of Pittsburgh men and capitalized at \$10,000, will erect a modern blast furnace and open hearth steel plant at New Castle, Ind.

The Victor Safe & Lock Company, located at Ninth and Broadway, this city, has recently installed two special machines for grinding circular doors of solid manganese steel. It also has increased its equipment by the addition of a new planer, several 30-inch drill presses, a shaper and planer. It anticipates in the near future being compelled to increase the size of its power plant, as the one it now is using is becoming too small for its rapidly increasing plant and will require probably a 250 horse-power boiler to meet the requirements of the service. Its plant covers about 140,000 square feet of floor space, distributed over three stories. It makes a specialty of safes from 500 to 15,000 pounds, having its own nickel plating works and also oxidizing copper plant in connection.

### New Incorporations.

The Balke & Co. Iron Works of Louisville, Ky., has been incorporated with \$25,000 capital. It will manufacture architectural iron, &c.

Dr. E. J. Fithian of the Bessemer Gas Engine Company is reported to be in Muncie, Ind., seeking a location for the new shops of his company.

The Gibbs Automatic Sash Lock Company of Lexington, Ky., has been incorporated with a capitol of \$20,000. It expects to soon begin the erection of a large factory in that city.

The Cope-Shieby Company of Elyria, Ohio, has been incorporated, and will erect a large factory between the tracks of the northern and southern divisions of the L. S. & M. S. Railway, where it will manufacture the Lou Dillon cultivator. The C. E. Little Company of Cincinnati has been incorporated with \$20,000 capital. It will engage in the manufacture of all kinds of wood work.

## The New York Pig Iron Warrant Market.

There was a fair demand for Pig Iron warrant certificates on the New York Produce Exchange the past week, the transactions amounting to about 1200 tons. Prices, however, again declined, February selling for \$16.65, against \$16.80, the lowest previous week's sale, and April, \$16.50, against \$16.80. In detail the sales were: February, 100 tons, \$16.75, and 100 tons, \$16.65; April, 300 tons, \$16.60, and 200 tons, \$16.50; May, 100 tons, \$16.75, 200 tons, \$16.70, and 200 tons, \$16.65.

The following are the quotations established on call, Wednesday noon:

	Bid.	Asked.
January .....		\$17.10
February .....	\$16.50	16.75
March .....	16.50	16.75
April .....	16.50	16.75
May .....	16.50	16.75
June .....		16.75
July .....		16.75

The employees of Rebecca furnace of the Kittanning Iron & Steel Mfg. Company, Kittanning, Pa., have been granted a voluntary advance in wages of 10 per cent.



## Central American Notes.

SANTO TOMAS, CENTRAL AMERICA, December 31, 1904. —The lines connecting with the Central American countries will have another link when the Mexico Central Railroad finishes its connection with the lately purchased Colima & Manzanillo Railroad. So far the Central has built about 250 miles south of Guadalajara, and expects to reach the Pacific by the new line within eight or ten months. Not only will this open up direct communication between the wonderfully prolific coffee district of Colima and the United States, but the terminus at Manzanillo will bring all the business of Salvador, Guatemala and Honduras many days nearer to American markets.

A number of Americans are trying to open up the Chiapas rubber districts. These have scarcely been worked heretofore, and they are in a region usually free from pernicious fevers. It is not only the coast region that produces rubber, but the banks of the Usumacinta and the hundreds of smaller rivers as well. This is also a fine mahogany country. The cleared lands will produce rice, cotton, bananas and many other tropical products. Right over the border, in Guatemala, the Germans have profited by their knowledge of this region and a considerable German colony has sprung up. Their importations of hardware and other goods come via Coban and the Polochie River. There is a German (Hamburg-American) line which connects with the river steamers at Livingston, Guatemala. Naturally, most of the imports are German goods, and their trading takes in Panzos, Salania, La Libertad and other districts.

Our miners are gradually getting into the Bluefields gold districts, although they are not always treated very liberally by the Nicaraguans, who now own this territory, formerly under British rule. The American syndicate working near Cabo Gracias is still dredging the river, most of the mining being done in Segovia district. It is a pity that these countries have never clearly defined and surveyed their boundaries, for much of the disputed territory between and on the boundary lines of Honduras, Nicaragua, Salvador and Guatemala has large deposits of iron and copper, not to speak of gold, silver and tin. It would certainly be a friendly as well as a diplomatic action on the part of our Government to offer these countries its aid in defining the boundaries, once for all.

Work on the canal at Panama is going slowly. There seems to be an eternal squabble or misunderstanding among many of our officials, which certainly retards the work. Then, again, through the assurances of some of our United States ministers many Americans come to the isthmus with the idea that it is all "moonshine" regarding the fevers (yellow, pernicious and others), hence take no precautions and quickly sicken and die. More than once has the writer said to business men through these notes in *The Iron Age* that the coast region is not for white men, except to a very limited degree, meaning that there are few who can resist the fever germs, and that Americans generally, for health and business, should seek the highlands of Central America. In fact, 90 per cent. of the business in these countries is transacted in the cool, high regions of the mountains.

**A Thermit Welding Feat.**—An interesting test of the use of thermit for welding was made at the shops of the Dunham Towing & Wrecking Company, Chicago, last week. A two-ton forged steel anchor had been broken squarely at the shank, where its diameter was about 6 inches. A representative of the Goldschmidt Thermit Company welded this anchor by the use of thermit. After the work was completed, the balance of the molten composition was poured from a crucible on a ½-inch boiler plate which was slightly inclined from the level. The molten mass burned its way through the boiler plate as a hot coal would go through paper. The Dunham Company is now making preparations to use thermit in welding the rudder casting of a large boat on Lake Superior, the section to be welded being about 8 x 20 inches. If this is accomplished it will effect a very great saving.

## Trade Publications.

**Lava for Mechanical and Electrical Purposes.**—American Lava Company, Chattanooga, Tenn. Illustrated catalogue. Contains a description of the nature and physical, mechanical and electrical properties of lava. The illustrations show a few of the many forms in which the material is used in the electric and mechanic arts. Two inclosed circulars show the Sunlight acetylene gas burner tips.

**Kerosene Engines.**—International Power Vehicle Company, Stamford, Conn. Illustrated catalogue. In the notice printed of this catalogue in the issue of January 12 it should have been stated that the engine was made in sizes of from 1¼ to 20 horse-power instead of 1¼ to 10.

**Deep Well Pumping.**—Laidlaw-Dunn-Gordon Company, Cincinnati, Ohio. Bulletin L 602. Describes a special steam head for operating deep well or other pumps where it is necessary to place the pump cylinder far below the steam cylinder.

**Graphite Lubricants.**—Joseph Dixon Graphite Company, Jersey City, N. J. Catalogue 5¼ x 8½ inches, 28 pages. It contains an interesting introduction concerning the growth of the company and a discussion of graphite lubrication in general and the quality of the various grades of Dixon's lubricating graphites, graphite greases and lubricating compounds. Also a few words concerning special preparations and other valuable graphite products.

**Small Tools.**—John M. Rogers' Boat, Gauge & Drill Works, Gloucester City, N. J. Catalogue No. 7, 6 x 9 inches, 43 pages. Lists measuring instruments of precision manufactured after the Richards system; adjustable bolt and solid reamers, adjustable hollow mills, adjustable thread cutting tools, hardened steel mandrels and other small tools. The latter part of the booklet contains useful information to assist calculations and standard tables of bolts and nuts, taps, &c.

**Gas Producers.**—Morgan Construction Company, Worcester, Mass. Illustrated pamphlet on gas fuel and the Morgan Company's gas producer, specially directed to those interested in melting and heating steel, roasting sulphide ores, burning bricks and wares, lime burning, annealing operations and chemical manufactures.

**Sheet Metal Work.**—Chattanooga Roofing & Foundry Company, Chattanooga, Tenn. Catalogue No. 23. Contains little text, being composed principally of illustrations showing pieces of work which the company has executed, including store fronts from cast and galvanized iron, cornices, moldings, finials, chimney caps, crestings, skylights, gutters, corrugated and round sheet iron pipe, cast iron columns, lintels, ventilators and wrought iron stairways, fire escapes, railings and various kinds of metal roofing and facings.

**Conveying Machinery.**—The United Telpherage Company, Westfield, N. J. Circular No. 53 and circular No. 54. No. 53 concerns the application of electricity to the conveying of ashes from the boiler room to cars, hoppers, dumps and barges, and No. 54 deals with apparatus for hoisting and transporting material between barges, scows, steamers or sailing vessels and railroads, piers or warehouses. Both are illustrated.

**Separators.**—The Baum Separator & Machine Company, Manheim, Pa. Catalogue. Gives brief description of several styles of guaranteed live steam and oil separators made by this company, with numerous half-tone and sectional illustrations and descriptions of various horizontal and vertical types. It also describes a whistle alarm discharge tank.

**Electric Locomotives, &c.**—The General Electric Company, Schenectady, N. Y. Bulletin No. 4390; pages 32. Subject, electric railway locomotives. Describes among others the 95-ton locomotive for the New York Central Railroad, illustrated in *The Iron Age* of November 17, 1904, and an earlier type of electric locomotive built for the Baltimore & Ohio Railroad and others in this country and abroad. An interesting feature is the appended tables of data and performance diagrams. Bulletin No. 4391 deals with air blast transformers, and flyer No. 2144 with pillow blocks.

The Riverside Metal Refining Company, Connellsville, Pa., has recently issued the second number of the *Ingot*, a little periodical which is described as "a nontechnical journal of helpful hints for practical users of metals and alloys." It will be published bi-monthly and at present consists of eight pages, only one of which is devoted exclusively to advertisements of the company. A few other unobtrusive advertisements are scattered through the reading pages, which are replete with interesting matter consistent with the aim of the publication as outlined in its statement of purpose.

## Calendars.

National Electric Company, Milwaukee, Wis. Monthly calendar mounted on card containing reproduction in colors of a painting entitled "The Thoroughbreds," showing two hunters jumping.

I. Gerson & Sons, Toledo, Ohio. Hanger monthly calendar. Center feature a colored picture of a healthy, happy youngster of the type usually associated with baby food advertisements.

J. H. Weaver & Co., Land Title Building, Philadelphia, Pa. Monthly calendar artistically engraved and showing a view of Harper's Ferry, W. Va.

W. H. Schott, 1218 Marquette Building, Chicago. Monthly calendar mounted on 13½ x 16½ inch board, with half-tone reproduction of a model hot water heating equipment for central station heating.

# HARDWARE.

THE extent to which February is becoming the convention month for retail Hardware associations is indicated in the fact that this year during that month the annual conventions of the associations of the States of Wisconsin, North Dakota, Nebraska, Iowa, Colorado, Kentucky, Illinois, Pennsylvania, Indiana, Minnesota, Missouri and Ohio will take place, those of New York and Connecticut occurring the first week of March. In this way between 3000 and 4000 Hardware merchants who are members of such associations will be brought together to confer formally in regard to the purposes for which they are united and to grapple with questions that press upon the attention of the trade. It is obvious that such gatherings are invested with a peculiar interest not only to the great class of merchants whom they represent and the jobbers and manufacturers from whom their goods are derived, but also to all students of trade conditions, and especially of the currents and counter-currents in business, as opportunity is thus given to watch the influences which determine the changes which are taking place and the tendencies which promise to work in the future still greater modification of conditions and methods.

These conventions are held this year at a very opportune time, as the organized Hardware trade in its most representative capacity will thus be permitted to express again and with increased emphasis its views on parcels post legislation. The associations are to be congratulated on the good work done in former years, when they exerted a wholesome influence in opposition to measures before Congress looking to the establishment of a parcels post characterized by decidedly objectionable features and contrary to principles which should govern in such matters. Their efforts in informing the public and in awakening public opinion in regard to the vicious features of the proposed legislation did much toward preventing its enactment. The matter is, however, up again before Congress and in an insidious form, as explained by our special Washington correspondent, whose Washington advices make plain the situation at the present time. It will be seen that there is call for prompt and energetic action, which, indeed, in view of the success which attended the efforts of the opponents of proposed changes during the present as well as former sessions, can be taken with good heart and in the hope that the opposition will result in preventing the changes contemplated.

The bill, however, on which a hearing is soon to be given, according to the provisions of which there is proposed a consolidation of third and fourth class matter to be carried through the mails at the rate of 8 cents a pound, is regarded by those who are in close touch with legislative interests as peculiarly dangerous. While not as objectionable as other bills which Congress has turned down, it is still wrong in principle, inasmuch as it would involve the carriage of merchandise at a serious loss and entail a still larger deficit in connection with the postal administration. It would, too, as our correspondent points out, undoubtedly result in encouraging express service for short distances, on which the Government might make at least the cost of the service rendered, while the transmission of merchandise for long distances would be left to the mails, to be done as best it might, at a very heavy loss to the Government. In connection with these reasons for condemning it as contrary to the principles which should hold in such cases it is important that the merchants of the country should recognize how

disturbing its influence would be upon trade as well as in many ways detrimental to the public good.

In this condition of things it behooves the associations of merchants who are in a position to recognize the effect of the proposed enactment to take prompt and aggressive action to inform and influence Congress. The associations which are to meet should therefore consider the subject carefully and practically, and, besides passing resolutions which express their disapproval of the measure, steps should be taken to have the matter brought forcibly to the attention of the individual members of Congress that they may realize that the commercial classes are opposed to the legislation in question. Arrangements should be made at the approaching conventions to have the subject in all its details presented for consideration, that the membership may act intelligently in the premises. In this work the efficient assistance of the officers of the National Retail Hardware Dealers' Association may be counted on, especially as their familiarity with the subject from their former wise and effective efforts is such as to give weight to their counsels in the suggestion of measures to be adopted for the prevention of legislation the enactment of which would be a serious injury to vested interests and contrary to sound principles of public administration. We bespeak from the officials of commercial organizations efforts even before the assembling of the annual conventions to protect the trade from the dangers which threaten it, seeing to it none the less that the conventions voice their judgment in the matter in no uncertain tone.

## Condition of Trade.

As January draws to a close there is something of a feeling of disappointment in the volume of its business. The trade conditions of November and December were exceptional, as manufacturers at the close of the year found their order books much better filled than usual. This was because of the freedom with which merchants had covered their requirements with a view to taking advantage of existing prices and providing for an adequate supply of goods. This policy obviously cannot be pursued indefinitely, inasmuch as merchants must have an opportunity to dispose of the stocks thus accumulated. With the opening of the year there were, too, fewer advances than many anticipated, many goods whose material is now costing considerably more than a few months ago being held at the old prices. While this is unquestionably a prudent course for manufacturers to pursue, the manufacturer loses the tonic effect of advances and things continue in a more normal state. The volume of business is, however, when these circumstances are taken into account, very satisfactory. Jobbers' orders to complete their assortments, their requirements being determined by the annual inventory, indicate a wholesome condition of things and show that liberal arrangements are making for the season's business. The feeling, too, among the jobbing trade, for example, is excellent, and it is evident that they are expecting a large volume of business as the result of the prosperity which so generally prevails. The decline in the price of cotton induces a less buoyant tone in some parts of the South, but on the whole things are in excellent condition in that section, and there is no doubt that there is a steady progress toward better agricultural, industrial and commercial conditions. Throughout the country generally the situation is very satisfactory, and the indications point to an activity in building with the entrance upon an unusual number and



variety of enterprises which should give employment to labor, investment of capital and call for the consumption of large quantities of manufactured products.

### Chicago.

Business, while dull at this season of the year, is very much better than that of January a year ago. This applies not only to purchases for current demand, but also to the unusual amount of future business that is being placed in the shape of contracts and orders. The market is in a healthy condition and it is evident from the character of orders received that retail Hardware dealers throughout the West are enjoying a satisfactory increase in their local business and the promptness with which invoices are met reflects ease of collection on the part of the retailer from his customers. An ordinance is before the Chicago City Council which seeks to compel retailers to pay a \$10 yearly license and wholesalers a \$25 yearly license for permission to carry Cartridges or other explosives, the license to be granted only on specific approval of the Fire Department after an investigation. This is being fought vigorously by the Hardware trade here and will doubtless be repealed as far as Cartridges are concerned, as numerous fires have demonstrated that there is little or no danger attendant on the storage of Metallic or Paper Shell Cartridges in any quantity.

## NOTES ON PRICES.

**Wire Nails.**—Considerable new business is being received, and this, together with specifications on contract orders, provides mills with abundance to keep them fully employed. No announcement as yet has been made of an advance in prices, but it is believed that higher prices will rule in the near future. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Carload lots to jobbers.....\$1.75  
Carload lots to retailers.....1.80

**New York.**—Demand continues light in the local market, the amount of business in small lots from store, however, being considered seasonable. The market is firm at the following quotations: Single carloads, \$1.94½; small lots from store, \$2.

**Chicago, by Telegraph.**—There is a disposition among jobbers and consumers to buy as far ahead as mills will permit at present figures. Prices are held firmly at \$1.90, base, in car lots to jobbers, and \$1.95 to retailers, with 5 cents extra for less than car lots from mill.

**Pittsburgh.**—January is always the duller month of the year in the Wire Nail trade and the present month is no exception. However, while new business is light, the mills are well filled up with contracts on which specifications are being received very promptly, thus giving the mills a full amount of work. Opinion is divided as to a probable advance in price of Wire Nails, some in the trade believing that it will not be made for some time, if at all, while others think it will come at a very early date. One of the leading local mills continues to hold Wire Nails at \$1.85 in carload lots and is said to be booking a fair amount of business at this price. We quote Wire Nails in carloads to jobbers at \$1.75 and in less than carloads at \$1.80, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days.

**Cut Nails.**—The meeting of the Cut Nail Association is scheduled for Wednesday of this week, but no change in prices is anticipated unless Wire Nails advance. In such a case Cut Nails would move up without formal announcement. During December Cut Nail mills were delayed in filling orders promptly by their inability to secure raw material. Even now stocks in yard are not as large as is desired. Specifications on contract orders are being received quite freely, and current demand is fair. The market continues firm. Quotations are as follows: Carload lots, \$1.75; less than carload lots to jobbers, \$1.80, and to retailers, \$1.90, f.o.b. Pittsburgh. Iron Cut Nails, for delivery at Pittsburgh, Buffalo and all points west of these cities, 10 cents advance per keg on Steel Nails.

**New York.**—The local market is without special interest, as demand is on a comparatively light basis. New York quotations are as follows: Carloads on dock, \$1.89; less than carloads on dock, \$1.94; small lots from store, \$2.

**Chicago, by Telegraph.**—The Cut Nail shares in the strength of the Wire Nail and prices would be much higher than they are if it were not for the competition of the Wire Nails. Increasing cost of Nail Plate makes it impossible for mills to secure adequate profits at the present quotations, which are as follows: \$1.90 for car lots to jobbers, \$1.95 in car lots to retailers, with 5 to 10 cents advance for less than car lots from mill, according to character and size of order.

**Pittsburgh.**—The Cut Nail Association is scheduled to meet to-morrow (Wednesday), but no advance in prices is anticipated. New business in Cut Nails is only fair, but the mills are pretty well filled up with contracts, on which buyers are specifying quite freely. We quote: Carloads, \$1.75, base; less than carloads to jobbers, \$1.80, base; less than carloads to retailers, \$1.90, base, plus carload rate of freight to point of delivery; terms, 60 days, less 2 per cent. off for cash in 10 days. Iron Cut Nails for delivery at Pittsburgh, Buffalo and all points west of these cities are 10 cents a keg higher than above prices.

**Barb Wire.**—In the West spring demand is in evidence, while the amount of business being placed in the eastern section of the country is comparatively small. The outlook for a large demand from all sections is regarded as promising. The market is firm at present prices. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots.....	\$1.90	\$2.20
Retailers, carload lots.....	1.95	2.25
Retailers, less than carload lots.....	2.05	2.35

**Chicago, by Telegraph.**—Spring trade is opening up in larger volume than is usual for January. Present official figures in car lots to jobbers at Chicago are as follows: Painted Wire, \$2.05; Galvanized, \$2.35; retailers, car lots, 5 cents higher; less than car lots, \$2.20 Painted; \$2.50 Galvanized. Staples, Bright, \$2; Galvanized, \$2.30.

**Pittsburgh.**—The mills are running mostly on contracts; the amount of new business being placed is light, as it always is in this month of the year. The mills confidently expect a heavy spring trade and as yet there has been no announcement from the leading interest of any advance in prices. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots.....	\$1.90	\$2.20
Retailers, carload lots.....	1.95	2.25
Retailers, less than carload lots.....	2.05	2.35

**Smooth Fence Wire.**—Specifications on contract orders are being shipped by the mills in large volume. An advance in price is anticipated. The market is firm in tone and quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....\$1.60  
Retailers, carloads.....1.65

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12	12½	13	14	15	16
Annealed.....Base.	\$0.05	.10	.15	.25	.35	.45	.55		
Galvanized....\$0.30	.35	.40	.45	.55	.65	1.05	1.15		

**Chicago, by Telegraph.**—Buyers are covering their requirements in as large tonnage as their estimates will permit and as far in the future as mills will allow. Advances in prices are looked for. Present official figures are \$1.75 for base sizes of Annealed Wire in car lots to jobbers, \$1.80 in car lots to retailers, with 5 cents extra for less than car lots. Galvanized Wire maintains its regular extra of 30 cents over Annealed.

**Pittsburgh.**—New business being placed is light, but the mills are filled up with contracts on which they are making heavy shipments right along. Prices are firm, but unchanged. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....\$1.60  
Retailers, carloads.....1.65

PRICES OF SHEET COPPER

Sizes of sheets.		64 oz. and over 50 lb. sheet, 30 x 60 and heavier.	32 oz. to 64 oz. 25 to 50 lb. sheet, 30 x 60.	24 oz. to 32 oz. 18 3/4 to 25 lb. sheet, 30 x 60.	16 oz. to 24 oz. 12 3/4 to 18 3/4 lb. sheet, 30 x 60.	14 oz. and 15 oz. 11 to 12 3/4 lb. sheet, 30 x 60.	12 oz. and 13 oz. 9 1/2 to 11 lb. sheet, 30 x 60.	10 oz. and 11 oz. 7 3/4 to 9 1/4 lb. sheet, 30 x 60.	8 oz. and 9 oz. 6 1/4 to 7 3/4 lb. sheet, 30 x 60.	Lighter than 8 oz.
		Cents per pound.								
Not wider than 30 inches.....	Not longer than 72 in.....	19	19	19	19	20	21	22	25	28
	Longer than 72 in.....	19	19	19	19	20	22	25	28	...
	Not longer than 96 in.....	19	19	19	19	21	25	...	...	...
	Longer than 96 in.....	19	19	19	19	21	25	...	...	...
Wider than 30 inches but not wider than 36 inches.....	Not longer than 72 in.....	19	19	19	19	21	25	26	29	...
	Longer than 72 in.....	19	19	19	19	21	25	28	...	...
	Not longer than 96 in.....	19	19	19	20	22	...	...	...	...
	Longer than 96 in.....	19	19	19	20	22	...	...	...	...
Wider than 36 inches but not wider than 48 inches.....	Not longer than 72 in.....	19	19	20	21	23	26	29	...	...
	Longer than 72 in.....	19	19	20	22	24	27	...	...	...
	Not longer than 96 in.....	19	19	21	23	27	...	...	...	...
	Longer than 96 in.....	19	19	21	23	27	...	...	...	...
Wider than 48 inches but not wider than 60 inches.....	Not longer than 72 in.....	19	19	20	22	25	30	...	...	...
	Longer than 72 in.....	19	19	21	23	28	...	...	...	...
	Not longer than 96 in.....	19	19	22	25	...	...	...	...	...
	Longer than 96 in.....	19	19	22	25	...	...	...	...	...
Wider than 60 inches but not wider than 72 inches.....	Not longer than 96 in.....	19	20	22	27	...	...	...	...	...
	Longer than 96 in.....	19	21	24	29	...	...	...	...	...
	Not longer than 120 in.....	20	22	27	...	...	...	...	...	...
	Longer than 120 in.....	20	22	27	...	...	...	...	...	...
Wider than 72 inches but not wider than 108 inches.....	Not longer than 96 in.....	20	22	25	...	...	...	...	...	...
	Longer than 96 in.....	21	23	26	...	...	...	...	...	...
	Not longer than 120 in.....	22	24	28	...	...	...	...	...	...
	Longer than 120 in.....	22	24	28	...	...	...	...	...	...
Wider than 108 inches.....	Not longer than 132 in.....	23	25	...	...	...	...	...	...	...
	Longer than 132 in.....	24	27	...	...	...	...	...	...	...

The longest dimension in any sheet shall be considered as its length.

Rolled Round Copper, 3/4 inch diameter or over, 10 cents per pound. (Cold Drawn, Square and Special Shapes, Extra).  
Circles, Segments and Pattern Sheets, 3 cents per pound advance over prices of Sheet Copper required to cut them from.  
All Cold or Hard Rolled Copper, 14 ounces per square foot and heavier, 1 cent per pound over the foregoing prices.  
All Cold or Hard Rolled Copper, lighter than 14 ounces per square foot, 2 cents per pound over the foregoing prices.  
Cold Rolled and Annealed Copper, Sheets and Circles, wider than 17 inches, take the same price as Cold or Hard Rolled Copper of corresponding dimensions and thickness.  
All Polished Copper, 20 inches wide and under, 1 cent per pound advance over the price for Cold Rolled Copper.  
All Polished Copper, over 20 inches wide, 2 cents per pound advance over the price for Cold Rolled Copper.  
Cold Rolled Copper prepared suitable for polishing, same prices and extras as Polished Copper.

TINNING.

Tinning Sheets, on one side, all sizes, per square foot, 2 1/2 cents. For tinning both sides, double the above prices.  
For tinning circles and segments, price is 2 1/2 cents per square foot upon the square of the circle, i. e. a 12 inch circle is considered one square foot.  
For tinning the edges of sheets one or both sides, price shall be the same as for tinning all of one side of the specified sheet.

**Sheet Copper.**—Under date January 19, the manufacturers of Sheet Copper and Copper Bottoms announced new prices on these goods as per the price-list given above. It will be observed that the base price on Sheet Copper has been made 19 cents per pound and that the base sizes have been changed so that 16-ounce and heavier now take the base price.

**Copper Bottoms, Pits and Flats.**—The following are the prices announced under date January 19 by the manufacturers of Copper Sheets, &c.:

	Cents.
14 ounces to square foot, and heavier, per pound.....	23
12 ounces and up to 14 ounces to square foot, per pound...	24
10 ounces and up to 12 ounces.....	26
Lighter than 10 ounces.....	29
Circles less than 8 inches diameter, 2 cents per pound additional.	
Circles over 13 inches diameter are not classed as Copper Bottoms.	
Polished Copper Bottoms and Flats, 1 cent per pound extra.	

**Carriage Bolts, Machine Bolts, &c.**—At a meeting of the manufacturers of Carriage Bolts, Machine Bolts, &c., held January 18, an advance was made along the whole line. The new discounts are as follows, there being the usual extra discounts to large purchasers:

Common Carriage Bolts, 3/4 x 6 and smaller and shorter, rolled thread.....	75 and 7 1/2 %
Common Carriage Bolts, 3/4 x 6 and smaller and shorter, cut thread.....	75 and 2 1/2 %
Common Carriage Bolts, longer and larger than 3/4 x 6, cut thread.....	70 %
Machine Bolts 3/4 x 4 or shorter and smaller.....	75 and 5 %
Machine Bolts with H. P. or C. P. Plain Nuts.....	70 and 5 %
Machine Bolts with C. and T. Nuts.....	65 and 10 %
Bolts without Nuts, 6-inch and shorter, 10 per cent. additional.	
Bolts without Nuts, longer than 6-inch....	6 per cent. additional.
Machine Bolt Blanks.....	70 and 5 %
Bolt Ends, with H. P. or C. P. Plain Nuts.....	70 and 5 %
Bolt Ends with C. and T. Nuts.....	65 and 10 %

**Nuts.**—The manufacturers of Cold Punched and Hot Pressed Nuts, at a meeting held January 16 and 17, decided upon the following advanced prices, beyond which are the usual concessions for large buyers:

	Cents off.
Cold Punched Plain Blank Square Nuts.....	4.90
Cold Punched Plain Blank Hexagon Nuts.....	5.40
C. T. & R. Blank Square Nuts.....	5.10
C. T. & R. Blank Hexagon Nuts.....	5.80
Cold Punched Plain Tapped Square Nuts.....	4.90
Cold Punched Plain Tapped Hexagon Nuts.....	5.40
C. T. & R. Tapped Square Nuts.....	5.10
C. T. & R. Tapped Hexagon Nuts.....	5.80
Hot Pressed Square Nuts, Blank or Tapped.....	5.40
Hot Pressed Hexagon Nuts, Blank or Tapped.....	5.80

**Coach, Lag and Skein Screws.**—At a meeting of the manufacturers of Coach, Lag and Skein Screws, held January 18, an advance was made. The new discounts are as follows, there being the usual extra discounts to large purchasers:

Gimlet Point Coach Screws.....	75 and 15 %
Cone Point Lag Screws.....	75 and 20 %
Skein Screws.....	75 and 15 %

**Galvanized Ware.**—A recent advance has been made by the manufacturers of Galvanized Pails, Tubs, &c., on account of the increased cost of the raw material and the very satisfactory demand for this line of goods. The market is characterized by a firm tone.

**Compression Bibs, &c.**—New prices have recently been determined upon by the manufacturers of Compression Bibs and related goods, carrying an advance of about 10 per cent. A firm tone characterizes the market.

**Asbestos Goods.**—There has for some time been a heavy demand for Asbestos and Asbestos Goods, and the prices for the raw material have consequently been advanced. The manufactured goods, however, have only felt the influence of this condition to a slight extent, being, perhaps, 5 to 7 1/2 per cent. higher than a year ago. The tendency, however, owing to the increased cost of the crude product will probably be toward somewhat higher prices. The increased demand for goods in this line is owing largely to new uses found for the products, but staple goods with which the trade are familiar, such as Mill Board, Asbestos Paper and Packing, &c., are also moving in in-



creased quantities, a tendency which is, perhaps, encouraged by the fact that prices remain substantially as they have been.

**Red Cedar Faucets.**—Among the goods which are feeling the effect of the growing scarcity of lumber are Red Cedar Faucets. As the result of the existing conditions manufacturers are obliged to hold prices on these goods firmly, and intimate that an advance in prices would not be unreasonable.

**Paris Green.**—The prices which were announced the first part of the month by manufacturers of Paris Green remain in force. Business is light and manufacturers are not soliciting orders, feeling that if there is a demand later in the season they can get more money for their product. The claim is made that if the raw materials were purchased at this time Green could not be sold at present prices and make any profit. Some of the manufacturers are guaranteeing prices against a decline on or before March 15, the latest date for making contract deliveries. Quotations are as follows:

	Per lb.
Arsenic kegs.....	12 c.
Kegs, 100 to 175 pounds.....	12½c.
Kits, 14, 28 and 56 pounds.....	13½c.
Boxes, 2 and 5 pounds.....	13½c.
Boxes, 1 pound.....	14 c.
Boxes, ½ pound.....	15 c.
Boxes, ¼ pound.....	16 c.

These prices are subject to the following differentials:

	Extra.
5000 to 10,000 pounds.....	½c.
1000 to 5000 pounds.....	1 c.
500 to 1000 pounds.....	1½c.
Less than 500 pounds.....	2 c.

**Rope.**—At this season demand probably reaches the lowest point in the whole year. Quotations remain unchanged and are as follows: Pure Manila, 11¼ to 12 cents; Pure Sisal, 10 cents; No. 2 quality Sisal, 8 to 8¼ cents per pound.

**Window Glass.**—The market is without any especial new developments, and demand continues excellent for the season. A slight increase in productive capacity has resulted from the putting in operation of a few additional pots. New York quotations are as follows: First two brackets, single, 90 and 15 per cent. discount; larger sizes single and all double strength, 90 and 5 per cent. discount; all from jobbers' list of October 1, 1903.

**Paints and Colors.**—*Leads.*—Manufacturers are fairly busy filling specifications on contract orders for White Lead in Oil. Some new business is being received, but not much is expected in this way until more favorable weather. The outlook for increased consumption for spring trade is regarded as favorable. Quotations are as follows: In lots of 500 pounds or over, 6½ cents; in lots of less than 500 pounds, 7 cents per pound. Prices on less favorably regarded brands are about ¼ cent less.

**Oils.**—*Linseed Oil.*—Demand is confined to small lots, large buyers being indifferent and out of the market. City Raw shows no change in values, but State and Western Oil can be obtained at 40 cents, in either large or small lots. Crushers are accepting contracts at this figure for delivery up to March 1. Quotations are as follows: City Raw, 43 to 44 cents, according to quantity; State and Western, 40 cents per gallon, for large or small quantities.

**Spirits Turpentine.**—With moderate receipts and light demand the Southern markets are easier, and this condition is reflected in slightly lower prices in this market. New York quotations, according to quantity, are as follows: Oil barrels, 54½ to 55 cents; machine made barrels, 55 to 55½ cents per gallon.

### THE GIFFORD-WOOD COMPANY.

WILLIAM T. WOOD & CO., Ice Tool manufacturers, of Arlington, Mass., and Gifford Bros., Hudson, N. Y., makers of Ice Elevating Machinery, have filed articles of incorporation, forming the Gifford-Wood Company. The chief office will be at Hudson, but future operations will be practically the same as in the past—the foundry and heavy manufacturing work being done at Hudson and the

skilled forging and finishing required in Ice Tool making done at Arlington. The officers of the Gifford-Wood Company are: William E. Wood, president; Malcolm Gifford, vice-president; Arthur Gifford, treasurer; William B. Wood, assistant treasurer; A. E. Heard, secretary. The forging shop of the Wood plant at Arlington, totally destroyed by fire some two weeks ago, will be rebuilt as soon as the weather will permit.

### WESTERN RETAIL IMPLEMENT, VEHICLE AND HARDWARE ASSOCIATION.

THE Western Retail Implement, Vehicle and Hardware Association held its sixteenth annual convention at Kansas City, Mo., on January 17, 18 and 19. It was estimated that the convention brought 3500 people to the city, including delegates, manufacturers, jobbers and visitors. The sessions of the convention were held in the Century Theater, where ample accommodations were provided for the delegates. The Kansas City Convention Hall, a short distance from the place of meeting, was filled with a large display of Farm Machinery, Wagons, Carriages, &c. The half day sessions of the convention gave the delegates an opportunity to visit the exhibits as well as the numerous Agricultural Implement concerns in the city. The entertainment committees of various Kansas City clubs and commercial organizations had made extensive arrangements for the entertainment of the guests, especially the ladies.

President E. B. Robnett of Columbia, Mo., presided, H. J. Hodge of Abilene, Kan., filling his place as secretary and treasurer. Addresses were made by several manufacturers, among them W. S. Thomas of Springfield, Ohio, and H. C. Staver of Chicago.

#### Catalogue Houses and Parcels Post.

President Robnett in his annual address said that it was becoming more difficult for the catalogue houses to secure goods of merit, and that the dealers should, as far as possible, decline to handle goods of manufacturers whom they knew to be furnishing supplies to catalogue houses. He emphasized the importance of local organizations of Implement dealers and congratulated the delegates on the success of the Reciprocal Underwriters' Fire Insurance Company, which had been organized by the association. He advocated a vigorous fight against the proposed parcels post law in Congress.

#### Membership 1460.

The annual report of the secretary showed a membership of 1460 members from 859 towns in the States of Kansas, Missouri, Oklahoma, Indian Territory, Colorado, Illinois, Texas, Arkansas, Nebraska, South Dakota, New Mexico and Arizona.

#### International Concessions.

One of the most important subjects considered by the convention was the report of the committee appointed to secure certain concessions from the International Harvester Company. The committee reported that they had uniformly met with success in their demands for a modification of previously existing conditions in machine contracts. Among the concessions was the elimination of the exclusive clause which required dealers to handle only Stackers, Rakes, Tedders, Twine, Hay Presses and Gasoline Engines made by the International Company. They reported an understanding by which the Harvester business should be confined to regular retail Implement men, also that a uniform retail price should be maintained.

A new constitution and by-laws was adopted. A resolution was passed whereby the association becomes part of the National Federation of Retail Implement Dealers.

#### New Officers.

The following officers were elected for the ensuing year:

PRESIDENT, T. G. Wiles, Cherokee, Kan.  
VICE-PRESIDENT, C. G. Cochrane, Plainsville, Kan.  
DIRECTORS: H. D. Skinner, Ludlow, Mo.; J. D. Clarkson, Carthage, Mo.; J. E. Ferguson, Kingman, Kan.; A. L. Branson, Trinidad, Col.; C. L. Turner, El Dorado, Kan.

## Parcels Post Bills Before Congress.

WASHINGTON, D. C., January 24, 1905.

THERE have been important developments during the past week in the campaign to secure the enactment of the populist legislation now being urged upon Congress by the so-called Postal Progress League. The annual post office appropriation bill has finally been reported without the addition of any of the various schemes that have been put forward by the league, and it will probably go through the House without important amendment; but a subcommittee of the House Post Office Committee has agreed to give a hearing to a representative of the league upon the proposition to consolidate third and fourth class mail matter at the rate of 8 cents per pound, which has been brought forward as an independent measure, but which is a long step toward parcels post, inasmuch as it reduces just one-half the cost of sending merchandise by mail. This measure is regarded by the opponents of a domestic parcels post as a very dangerous proposition, especially for the reason that the Third Assistant Postmaster-General has been induced to give it his official support and to secure for it the indorsement of the Postmaster-General. Merchants and others interested in this subject should lose no time in advising their Representatives in Congress as to the injurious effect of the passage of such a bill.

The decision of the House Post Office Committee to report the annual post office appropriation bill without an amendment was reached after very careful consideration. There was a disposition to adopt the plan proposed by General Bristow for a cheap local delivery on rural routes of packages originating at distributing offices only, but it was found necessary to abandon this plan to prevent loading the bill down with other amendments, the majority of which were regarded as very undesirable. The popularity of the Bristow plan induced members favoring other schemes to use it as a lever for the purpose of forcing into the appropriation bill propositions that would be highly injurious to the retail merchants of the country, in whose aid General Bristow's project was devised. While many of the strongest opponents of a domestic parcels post favor General Bristow's plan and regret that it should not have been incorporated in the budget bill, they will nevertheless derive great satisfaction from the demonstration given by the committee that if any attempt is made to use legitimate projects as a means of forcing undesirable legislation the committee will have the courage to discard every proposed amendment and to protect the integrity of the postal service. Under the rules of the House new legislation can be incorporated in an appropriation bill only by unanimous consent; hence, to add a single new proposition to a budget bill it is necessary to placate the entire opposition, and as the result of such deals it often happens that extravagant and improper legislation is enacted. To prevent such a result in this instance the committee wisely decided to sacrifice all new legislation and bring in a straight appropriation bill.

### The New Bill.

The bill upon which the secretary of the Postal Progress League is to have a hearing before a subcommittee at an early date was drafted in accordance with a recommendation of Third Assistant Postmaster-General Madden, who in three successive annual reports has urged that merchandise be included with printed matter in the third class and the rate thereon reduced to 8 cents per pound. General Madden's reasoning is somewhat peculiar, his chief argument being that it is difficult for the average person to discriminate between third and fourth class mail matter. He admits that at the outset the proposed consolidation would add at least \$500,000 to the large deficit for the next fiscal year, which will probably exceed \$15,000,000, but he thinks that in the course of a few years the increased use of the mails for third-class matter would make up the shortage caused by the reduction in rate. It was

not so very long ago that General Madden, in a letter to Representative Swanson of the House Post Office Committee, stated that the cost of handling and transporting mail matter was about 14 cents per pound, from which it would appear that the present merchandise rate of 16 cents now nets a small profit, while the proposed rate of 8 cents would cause a loss of nearly 50 per cent. of the total expense of handling this class. A prominent official of the Post Office Department of many years' experience, who does not agree with General Madden's view of this matter, recently said to the correspondent of *The Iron Age*:

"If such a bill should go through the postal service in six months would be carrying thousands of tons of merchandise clear across the continent for 8 cents per pound, while the short haul business, which alone could be done at the rate of 8 cents per pound without creating a deficit, would be left in the hands of the express companies. The figures compiled by the Department show that the average cost of handling mail matter is nearly 14 cents per pound, and the effect of a rate that would give us an enormous volume of business between New York and San Francisco that now goes by freight or express can better be imagined than described. Of course, the mail order houses would be delighted with such a proposition, which would cut their postage bills in two so far as merchandise is concerned, and enable them to still further reduce the prices of a great deal of their second-class merchandise."

It is not believed that the House Post Office Committee can be induced to make a favorable report upon this proposition at a time when the deficit in the postal revenues is rapidly increasing, but merchants in all sections will do well to register their protests against it and to advise the chairman of the committee, Hon. Jesse Overstreet, as well as their own Representatives, of the views entertained by the business men of the country.

W. L. C.

## CHICAGO'S CATALOGUE HOUSE BUSINESS.

A SUMMARY of Chicago's trade for the year 1904 published in one of the large dailies is authority for the statement that the business of the two large mail order houses in Chicago aggregated \$65,000,000 in 1904, as against \$55,000,000 in 1903, an increase of about 18 per cent. This article also stated that the increase was all the more unexpected because the year was one of great prosperity in the agricultural communities, and that it had been the history of the mail order house business that it prospered most during hard times, when money was scarce, and that during the prosperous eras the farmers were more likely to trade with local dealers.

Another point that was brought to the attention of the public was the fact that a surprisingly large trade came from districts near Chicago, in which the advent of the trolley had been looked upon by the mail order house as a menace, because it permitted shoppers to come to Chicago at low rates instead of sending in orders by mail.

It is estimated that 20 per cent. of the total sales of mail order houses include lines that are carried by retail Hardware stores and that 10 per cent. include strictly Hardware items, exclusive of Stoves. If this is the case, the Chicago mail order houses sold during 1904 \$13,000,000 worth of goods such as are carried by some Hardware stores and \$6,500,000 worth of goods carried by all Hardware stores. While this is apparently a very large sum, yet it is not sufficiently large to appal or discourage Hardware dealers of the country, who after all enjoy the great strategic advantage of being on the ground and having the articles to show, added to the great force of personal influence and persuasion which, of course, is denied to the mail order house.

One of the two large mail order houses in Chicago is about to expend something like \$5,000,000 for the erection of entirely new premises covering three city blocks, the purpose being to erect and equip buildings in such a way that material can be brought in from the factories and transferred to the outgoing cars with the minimum expense for handling. This will make the firm in question an even greater competitor than it has been, and par-



ticularly on such lines as Stoves and Agricultural Implements, in which the cost of handling has heretofore been very great. The company in question manufactures its own Stoves in one of the largest Stove plants in the United States, if not in the world, and also manufactures its own Firearms in a plant which has just been doubled in size. A number of other lines that were originally bought from manufacturers and jobbers by this and other mail order houses are now being manufactured in plants of their own. The tendency of the mail order trade is toward the manufacture of their own goods, a course to which they say they are driven by the refusal of jobbers and manufacturers to sell them.

## HARDWARE ORGANIZATIONS.

*The following conventions of State Retail Hardware Associations will be held during February and March:*

### WISCONSIN RETAIL HARDWARE ASSOCIATION:

Ninth annual meeting, February 1 and 2, Milwaukee. Headquarters, Republican House. Membership, 400; gain since last meeting, 100. President, H. L. McNamara, Janesville; secretary, C. A. Peck, Berlin.

### NORTH DAKOTA RETAIL HARDWARE ASSOCIATION:

Eighth annual meeting, February 1, 2, 3, Fargo. Headquarters, Metropole Hotel. Sessions at Fargo Commercial Club. Membership, 190. President, H. F. Emery, Fargo; secretary, C. N. Barnes, Grand Forks.

### NEBRASKA RETAIL HARDWARE DEALERS' ASSOCIATION:

Fourth annual meeting, February 7 and 8, Omaha. Headquarters, Millard Hotel. Membership, 200. President, J. C. Cornell, Ord; secretary, H. J. Hall, Lincoln.

### IOWA RETAIL HARDWARE DEALERS' ASSOCIATION:

Seventh annual meeting, February 8, 9 and 10, Des Moines. Headquarters, Savery Hotel. Sessions at Commercial Exchange Hall. Membership, 350. President, S. R. Miles, Mason City; secretary, A. R. Sale, Mason City.

### COLORADO RETAIL HARDWARE DEALERS' ASSOCIATION:

Third annual meeting, February 14 and 15, Denver. Headquarters, The Adams. Membership, 125. President, A. L. Branson, Trinidad; secretary, F. C. Moys, Boulder.

### KENTUCKY RETAIL HARDWARE AND STOVE DEALERS' ASSOCIATION:

Fifth annual meeting, Louisville, February 14 and 15. Headquarters, Gault House. President, J. C. Frederick, Owensboro; secretary, John R. Sower, Frankfort.

### ILLINOIS RETAIL HARDWARE DEALERS' ASSOCIATION:

Seventh annual meeting, February 14, 15 and 16, Peoria. No official hotel headquarters. Sessions at Turner Hall. Membership, 300. President, C. H. Williams, Streator; secretary, L. D. Nish, Elgin.

### PENNSYLVANIA RETAIL HARDWARE DEALERS' ASSOCIATION:

Fourth annual meeting, February 21 and 22, Harrisburg. Membership, 200; gain since last meeting, 65. President, Joseph M. Selheimer, Lewistown; secretary, J. E. Digby, McKees Rocks.

### INDIANA RETAIL HARDWARE DEALERS' ASSOCIATION:

Sixth annual meeting, February 21, 22 and 23, Indianapolis. Headquarters, Denison Hotel. Membership, 425; gain since last meeting, 48. President, E. M. Bush, Evansville; secretary, M. L. Corey, Argos.

### MINNESOTA RETAIL HARDWARE ASSOCIATION:

Ninth annual meeting, February 23, 24 and 25, Duluth. Headquarters, Spalding Hotel. Sessions in Lyceum Theater. Membership, 600. President, A. T. Stebbins, Rochester; secretary, M. S. Mathews, Boston Block, Minneapolis.

### MISSOURI RETAIL HARDWARE AND STOVE DEALERS' ASSOCIATION:

Seventh annual meeting, February 21 and 22, St. Joseph. Membership, 160. President, Taylor Frier, Louisiana; secretary, Fred. Neudorff, St. Joseph.

### OHIO HARDWARE ASSOCIATION:

Eleventh annual meeting, February 28, March 1 and 2, Dayton. Headquarters, Algonquin Hotel. Membership, 325. President, John F. Baker, Dayton; secretary, Frank A. Bare, Mansfield.

### CONNECTICUT RETAIL HARDWARE DEALERS' ASSOCIATION:

Second annual meeting, March 7, Hartford. Headquarters, Hotel Hartford. President, W. A. Church, Derby; secretary, James De F. Phelps, Windsor Locks.

### NEW YORK STATE ASSOCIATION OF RETAIL HARDWARE DEALERS:

Third annual meeting, March 7, 8 and 9, Buffalo. Headquarters and meeting at Hotel Iroquois. Membership, 175. President, John G. Ferres, Johnstown; secretary, John B. Foley, Syracuse.

### NATIONAL RETAIL HARDWARE DEALERS' ASSOCIATION:

Minneapolis, Minn., March 14, 15 and 16.

### NEW ENGLAND RETAIL HARDWARE DEALERS' ASSOCIATION:

Twelfth annual meeting, March 15 and 16, Boston. President, John H. Sayward, Haverhill; secretary, F. Alexander Chandler, 36 Federal street, Boston.

## Kentucky Retail Hardware Dealers' Association.

The annual meeting of the Kentucky Retail Hardware Dealers' Association will be held at the Gault House, Louisville, February 14 and 15. Manufacturers and jobbers are invited to attend and to make displays if they so desire.

## Illinois Retail Hardware Dealers' Association.

Among the papers which will be read at the annual meeting of the Illinois Retail Hardware Dealers' Association, on February 14, 15 and 16 at Peoria, will be the following:

"The Association: Its Objects, Results and Future," by H. G. Cormick, Centralia.

"The Work of the National Association," by W. P. Bogardus, president, Mount Vernon, Ohio.

"Plumbing in Connection with the Hardware Business," by L. D. Ray, Belvidere.

"The Hardware Store, Past, Present and future," by Grant W. Porter, Chicago.

"Work and Be Square," by F. J. Mathews, Mount Vernon.

"Steel Range," by S. S. Woodward, Carlinville.

The contents of the Question Box will come up for discussion at several of the sessions. This feature of the convention is under the care of Frank L. McKinney of Rockford, who requests that questions be sent in before the meeting if possible.

## Minnesota Retail Hardware Association.

The programme for the annual meeting of the largest of the State retail Hardware associations, that of Minnesota, indicates that the coming convention at Duluth on February 22, 23 and 24 will be an exceptionally interesting one, with a large representation of the more than 600 merchants comprised in the association. Representatives of manufacturing and jobbing interests will doubtless also be in attendance in impressive numbers. Among other addresses at the meeting will be the following:

"Why Should a Hardwareman Be a Member of the Association?" by Vice-President Geo. M. Evenson, St. Peter.  
 "A Few Insurance Pointers," by A. C. Hatch, former president of the Retail Hardware Dealers' Fire Insurance Company of Minnesota.  
 "Advertising a Hardware Store in a Country Town," by C. H. Casey, Jordan.  
 "The Science of Salesmanship," by W. L. Barth of the Sheldon School of Scientific Salesmanship, Chicago.  
 "From a Jobber's Standpoint," by H. D. Final, Marshall-Wells Hardware Company, Duluth.  
 "Co-operation," by Jesse Gregg of Nicols, Deane & Gregg, St. Paul.  
 "As Seen by a Traveler," by F. H. Young.  
 "A Hardwareman of Minnesota," by E. L. Millar of the Duluth Trade News.

W. P. Bogardus, president of the National Association; Hon. John A. Johnson, Governor of Minnesota, and Hon. T. D. O'Brien, Insurance Commissioner, will be present and address the gathering.

### Retail Hardware [Dealers' Mutual Fire Insurance Company of Minnesota.

Following is the fifth annual statement of the Retail Hardware Dealers' Mutual Fire Insurance Company of Minnesota at the close of business December 31 last:

Income in 1904.	
Cash on hand January 1.....	\$34,820.99
Premiums written.....	42,833.89
Collections from previous year.....	1,127.59
Receipts from interest.....	804.48
	<b>\$79,086.95</b>
Disbursements.	
Losses .....	\$16,028.78
Return premiums to policy holders.....	9,614.10
Cancellations and rebates.....	1,121.84
Expense .....	4,287.50
Premiums due.....	1,609.98
Cash on hand.....	46,424.75
	<b>\$79,086.95</b>
Itemized Expense.	
Taxes .....	\$372.95
Salaries .....	1,839.05
Rent .....	80.75
Advertising and printing.....	550.71
Legal expense.....	50.00
Adjusting losses.....	295.98
Postage .....	312.73
Exchange .....	51.65
Secretary's traveling expenses.....	58.41
Miscellaneous expenses.....	493.79
Commissions .....	181.48
	<b>\$4,287.50</b>
Insurance written in 1904.....	1,876,680.00
Insurance in force.....	1,787,680.00
Cash on hand and premiums due.....	48,034.73
Liabilities (reinsurance reserve).....	16,215.38
Net surplus.....	31,819.35
Ratio of losses to premiums.....	38 per cent.
Ratio of expense to premiums.....	10 per cent.

The company reports a 40 per cent. increase of business in 1904 of 40 per cent. A return premium of 35 per cent. has been declared upon all policies expiring during the present year, which represents the saving as compared with the regular insurance rates.

### Ohio Hardware Association.

Frank A. Bare, Mansfield, secretary of the Ohio Hardware Association, writes as follows in regard to the coming annual convention:

The outlook for the next session of the Ohio Hardware Association is unusually bright. We have been exceptionally fortunate in getting some prominent speakers for this convention. The retail dealer will come in contact not only with bright, progressive dealers of our own State, but he will have the opportunity of meeting and listening to some men of national reputation. The social features have been given careful attention, and the members will receive pleasant and satisfactory entertainment.

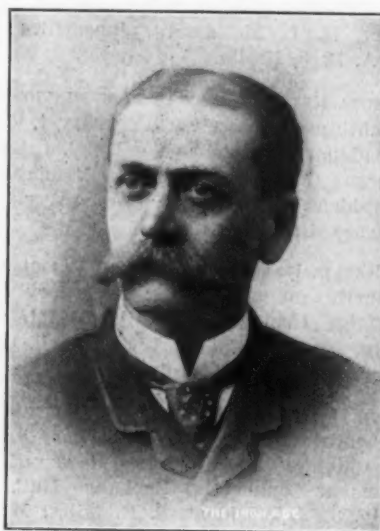
Questions of vital importance to our business will be discussed. Mr. Norvell will have some very interesting things to say about the work he has been doing for the retailer during the past year. Mr. Sheldon will show the possibilities of salesmanship in a new light. President Bogardus and Secretary Corey of the National Association, who have visited every retail association in the United States, will make a number of interesting talks. We expect to have a convention full of enthusiasm, sociability and education.

### NEW ENGLAND IRON AND HARDWARE ASSOCIATION.

THE annual banquet of the New England Iron and Hardware Association was held at the Hotel Vendome, Boston, Tuesday, 24th inst., preceded by a reception in charge of a committee headed by R. M. Boutwell as chairman. Former annual dinners of this association have established a high standard of excellence, which was fully lived up to on this occasion. The banquet room was tastefully decorated with bunting and the tables with cut flowers. Music was furnished by an orchestra during the reception and dinner.

President Charles F. Bragg of Bangor, Maine, acted as toastmaster. Those occupying places at the head table were Charles F. Bragg, Hon. J. L. Robinson, Hon. P. P. Campbell, Edgar Van Etten, vice-president N. Y. C. & H. R. R. R.; Edward B. Wilson, president Boston Board of Trade; Rev. Thos. Van Hess, Sam'l A. Bigelow, president National Hardware Association; Wm. P. Hill, Samuel Disston and Walter C. English of *The Iron Age*.

As usual, many representative Hardwaremen and manufacturers from all parts of New England were present.



C. F. BRAGG, President.

ent, most of the members of the association having one or more guests.

The arrangements for the banquet were in charge of John T. Boyd and were perfect in every detail. Mr. Boyd is the manager of the New England office of Yale & Towne Mfg. Company, and has been clerk of the association for several years. He also holds other positions of honor in the business circles of Boston, and is particularly well fitted to plan social affairs.

### President Bragg's Address.

At the close of the dinner President Bragg addressed the company as follows:

There is a strong contrast between the business conditions of a year ago and to-day. Then we were facing a depression, the extent of which no one could foretell. Fortunately, it was of short duration and to-day we appear to be on an advancing wave of prosperity. Is any one wise enough to say how long it is to last? I don't intend to appear as a pessimist, for it is contrary to my nature, but experience teaches us that one extreme follows another, and periods of prosperity are followed by periods of depression, as surely as the incoming is followed by the outgoing tide, and with almost as much regularity, and with due respect to our friends, who are devoting their time and talents to making laws for our benefit, legislation will not prevent these changes until in the slow processes of nature the perfect man has been evolved, which is not likely to come in our day. They may be hastened or retarded, according to whether



our legislators "stand pat" on the tariff and currency, or decide in their wisdom that a change is for our good. They are bound to come, however, sooner or later, for the inevitable accompaniment of prosperity is overconfidence and excessive speculation, and the penalty for excesses in any direction is repentance in sack cloth and ashes.

#### HOW, THEN, CAN WE OBTAIN THE BEST RESULTS

under these varying business conditions? Some years ago a prominent railroad manager, who was his own purchasing agent, was discussing the morality of accepting commissions on his purchases with a friend of mine. During the discussion, he stated that he didn't propose to have it said of him after he was dead that he had been a fool and neglected his opportunities. I have often wondered in times past, when jobbers have been selling goods on an advancing market at less than a reasonable profit over the replacement value, whether they realized that the time was sure to come when they would be obliged to sell them at less than cost on the declines, and that the surest way to avoid disaster in times of depression was to take advantage of their opportunities in times of prosperity.

#### INDEPENDENT VS. ASSOCIATED ACTION.

The old idea that the best individual results could be obtained by independent action has in recent years given



R. M. BOUTWELL, Chairman Reception Committee.

place to the belief that they can only be realized by association.

Our association has been formed for the purpose of bringing competitors into closer personal relations, and the exchange of ideas and information, and the discussion of questions of mutual interest, in order that some of the sharpness of competition might be eliminated, and the maximum of benefit and minimum of disaster be realized as the tides of business ebb and flow. We have not yet reached the ideal and may never do so, but much has been said and may be accomplished of general benefit to the trade, and I would ask those who have not yet joined the association to consider whether they have not been benefited by it, and if so, if they do not consider it their duty as well as privilege to give us their advice and assistance in trying to bring about better business conditions, as well as their financial aid, by becoming members.

#### SUCCESS OR FAILURE IN ANY LINE

is largely the result of the judgment displayed in taking advantage of the opportunities presented. An opportunity is before us to-day. Will we take advantage of it? I hope we may, and by acting together for the common good prove that the manufacturer who stated at one of our recent meetings that the jobbers didn't know enough to take a profit when they had the chance, uttered a libel at least against the members of the New England Iron and Hardware Association.

#### Other Addresses.

The principal entertainment of the evening was furnished by two Congressmen from the West, who delivered interesting addresses of some length interspersed with good stories, which greatly pleased the company. President Bragg first introduced Hon. P. P. Campbell of Kansas, who spoke on the topic, "Reciprocity and Revision," in true platform style. He was followed by Hon. J. L. Robinson of Arkansas, speaking for three-quarters of an hour on the subject, "Corruption of the Ballot." These addresses were well received, and so filled the time that opportunity for other orators was restricted to one or two members of the trade called upon for brief speeches.

#### Those Present.

Following is a list of those present not mentioned above:

Thos. H. Baldwin,	Alex. S. Stanley,	Geo. W. Herrick,
Edgar Reed,	Leon C. Carter,	James A. Lowell,
John H. Robbins,	Robert N. Peck,	Chas. H. Breck,
L. H. Pease,	F. F. Hodges,	Henry A. Brown,
Wm. A. Hopkins,	L. W. Thompson,	Allan J. Chase,
Geo. P. Hart,	Chas. A. Adams,	C. H. Parker,
A. H. Decatur,	Geo. E. McClintock,	W. G. Angell,
Josiah E. Bacon,	Chas. E. Johnson,	T. M. Green,
Chas. F. Dowse,	Lester F. Thurber,	Wm. C. Merrill,
Geo. P. Bullard,	I. Frank Stevens,	G. A. Sagendorph,
Chas. King,	J. F. Kemp,	Fred. H. Butts,
Geo. Libby,	Wilbur S. Locke,	Dr. E. O. May,
T. F. Duffy,	H. P. Bope,	Albert I. Inman,
W. E. Stevens,	Geo. B. Dexter,	Thos. J. Booth,
Joseph H. Williams,	Oscar A. Shepard,	R. W. Baker,
Charles B. Parsons,	Chas. E. Stumcke,	Wm. F. Hickey,
James A. Monroe,	J. Bradford Hunter,	J. D. Keith,
Charles A. Burditt,	Harry L. Doten,	H. W. Hayes,
N. P. Cooley,	Francis B. Austin,	L. B. Morris,
J. D. Rawles,	R. H. Boutwell,	Hayward C. Dodge,
J. T. Powers,	Geo. E. Holton,	Frank W. Brigham,
F. M. Smith,	John Spliers,	E. P. Sanderson,
C. A. Fitch,	Geo. J. Mulhall,	Chas. C. Lewis,
D. F. Barber,	Wm. Q. Wales,	J. E. Frenning,
A. G. Bowman,	Fred. L. Greely,	C. W. Henderson,
M. A. Chandler,	G. C. Libbee,	F. E. Bragg,
E. L. Richards,	A. H. Ranlett,	A. C. Harvey,
B. A. Hawley,	W. A. Jackson,	A. B. Marble,
A. M. Wiley,	Harry W. Waite,	James Denny,
H. S. Hart,	Frank Dickerson,	Robert E. Hofer,
Charles H. Parsons,		

#### DEATH OF EDWIN L. HALEY

EDWIN L. HALEY died at his residence in North Wilmington, Mass., January 18, of pneumonia, after an illness of one week. Mr. Haley was in his fifty-seventh year, having been born in Cambridge, Mass., in 1849. He was educated in the private and public schools of Boston. Mr. Haley's first business experience was with Preble, Keith & Hill. He remained with this house until 1872, when he entered the employ of Macomber, Bigelow & Dowse. In 1883 he became connected with the firm of Dodge, Haley & Co., the well-known Heavy Hardware house of Boston, which succeeded Dodge, Gilbert & Co. In 1895 Mr. Haley formed the firm of Haley & Brennan. For some years he had been active in the work of the New England Iron and Hardware Association, occupying the office of commissioner and having charge of their extensive bureau and collection agency. In this position he did effective work and came in contact with many in the trade of the New England States. The funeral was held on January 21 and was largely attended by the trade. At a special meeting of the directors of the New England Association a committee was appointed to draft appropriate resolutions in view of Mr. Haley's death.

CHAS. SPARKS, formerly connected with the Simmons Hardware Company, St. Louis, for 18 years, the last nine years as manager of the company's immense retail establishment, has become manager of the mail order department of the Norvell-Shapleigh Hardware Company, also of St. Louis. The business of the Norvell-Shapleigh Company, which is exclusively wholesale, has been increasing very rapidly, in which growth the mail order department has held its own. The company is intending to give special attention to the development of this branch of its business, an effort in which Mr. Sparks' general knowledge and experience and practical acquaintance with the requirements of retail Hardware merchants will be of very material service.





is devoted to each size of goods, with the size or number marked on the top of the partition, so as to avoid mixing goods.

#### Miscellaneous Measures.

Under the stairway leading to the second floor, the location of which can be seen in Fig. 2, miscellaneous Measures are kept, as in Fig. 39, utilizing the space to

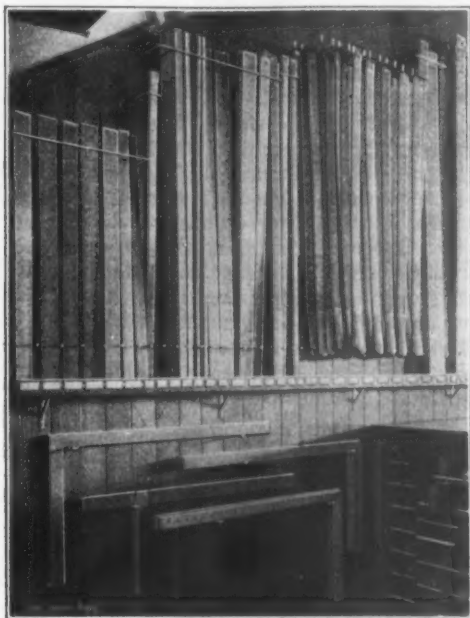


Fig. 39.—Measures Under Stairway.

good advantage and providing adequate accommodation for the goods in a location which is convenient of access. Board and Log Measures are hung on cornice hooks. Measures without heads have the upper ends confined by long wire staples, with the lower ends standing on the shelf beneath. Tailors' Measures are hung on the hooks under the shelf.

#### Cupboards and Bins.

To the right of the Tailors' Measures a portion of a cupboard, 42 inches deep, is shown, of which a larger



Fig. 40.—Cupboard Under Stairway.

illustration is given in Fig. 40. A feature of all cupboards and bins is that they have removable interiors,

these having been built separately and slid into place. They are easily removed to make way for other classes of goods when desired. The goods accommodated here include Stub's Steel, Bell Hanger Bits, Plumbs and Levels longer than 24 inches, Butcher, Buck and Tang Saw Blades. The openings are of different depths, to prevent the goods being pushed in too far.

#### PLUMBS AND LEVELS.

Plumbs and Levels shorter than 18 inches, and also Level Glasses, are kept in drawers, as shown in Fig. 41,

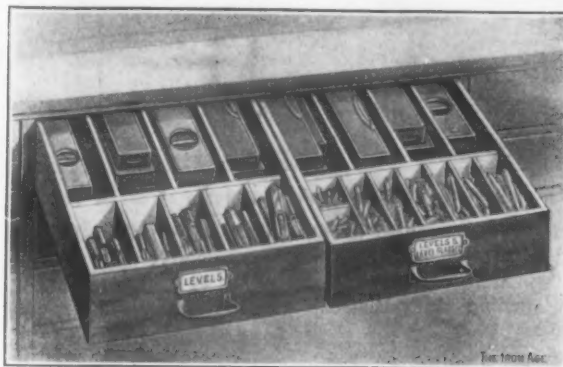


Fig. 41.—Plumbs and Levels and Glasses.

there being four drawers on the same level. Plumbs and Levels from 18 to 24 inches are kept in cupboards, with drop fronts, under the ledges.

#### ROUND DIES.

The manner of accommodating Round Dies (Fig. 42) emphasizes the advantage of metal partitions, which are



Fig. 42.—Accommodating Round Dies.

used to a considerable extent in the drawers in this department to economize space. Gains are cut in the wood partitions and band iron of required length is placed between the wood partitions in the gains.

## STEEL SAW BLADES AND TAPS.

Short lengths of Stub's Steel, in 60 numbers, are kept in the bin with drop front, shown in Fig. 43. For's

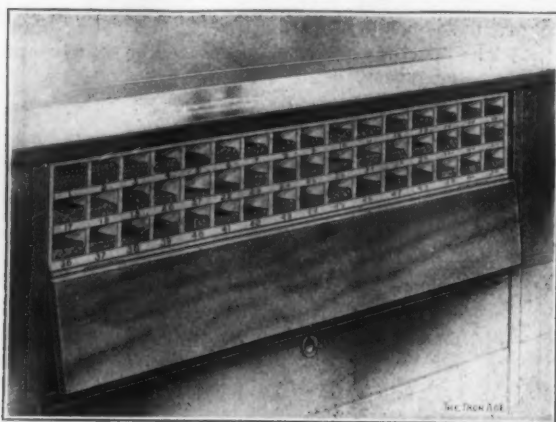


Fig. 43.—Sixty Numbers of Short Lengths of Stub's Steel.

catches, supplemented by flush rings for finger hold, are used on all bin fronts and cupboard doors.

Two methods are shown in Fig. 44 for keeping Jig and Turning Saw Blades. Partitions are run on an

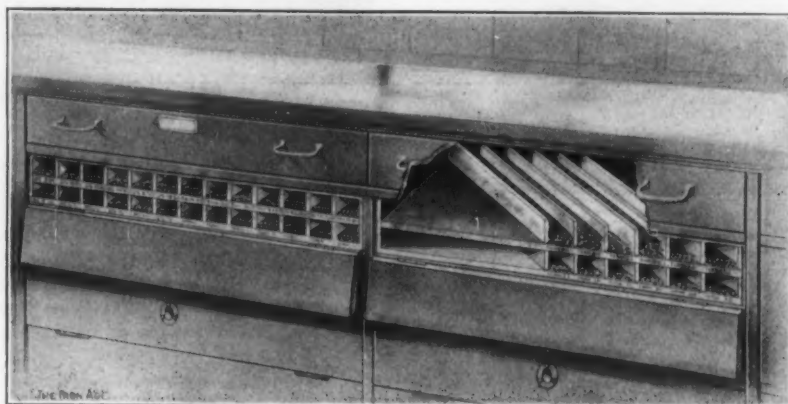


Fig. 44.—Jig and Turning Saw Blades.

angle to accommodate those which are too long for the regular depth of the shelving.

Hand Taps from  $\frac{1}{4}$  to  $\frac{3}{8}$  inch sizes, in Taper, Plug



Fig. 45.—Hand Taps.

and Bottom, are kept as shown in Fig. 45, so that full sets of either size may be sold from the same drawer.

(To be continued.)

## READING HARDWARE COMPANY'S DINNER.

EACH year it is the custom of the Reading Hardware Company, Reading Pa., to give to its sales department a banquet. Last year it had a good time in New York, but this year the Philadelphia representatives had the pleasure of entertaining their brethren from New York and Reading. On January 13 at noon the delegations from these two cities were met at the Reading terminal. They immediately proceeded to the City Hall, where they paid their respects to Mayor Weaver. The party was equipped with automobile caps, and these proved to be just what was needed, for automobiles were in waiting, and the members were quickly taken to the Germantown Cricket Club, where they were met by Colonel Potter and Morris D. Wood, who conducted the visitors through the beautiful club house. A most delightful luncheon had been provided and was thoroughly enjoyed by all present. Colonel Potter proved himself a splendid host and his after dinner speech was the feature of the occasion. The party then proceeded to the bowling alleys, where a contest was had between New York and Philadelphia representatives. A ride through Fairmount Park followed, after which the company's guests were taken to the Bellevue-Stratford Hotel, where the dinner was held. John E. Harbster, president of the company, was the guest of the evening. He spoke of the

marked success of the company and of the many new lines it had taken up. His remarks were pointed and encouraging. Robert Grier, the Mayor's secretary, made an eloquent address on Philadelphia and was loudly applauded. T. B. Hendrickson, manager of the Philadelphia store, acted efficiently as toastmaster.

Next morning the entire party was, through the courtesy of the Mayor, given a ride up the river in the fire boat Ashbridge to Torresdale. After dinner at the Rathskeller the party broke up with high praise and appreciation of the company's hospitality. The assemblage comprised the following persons: J. E. Harbster, T. B. Hendrickson, S. C. Packard, O. M. Milligan, G. F. Ogden, S. Y. Reigner, H. H. Bronson, W. P. Randle, F. A. Schumacher, R. H. Hutchinson, F. J. Kelly, S. R. Richards, J. C. McDonald, W. F. Duffield, W. F. Baldwin, W. V. Weeks, H. E. Lovell, W. H. Van Keuren, E. S. Naylor, W. H. Arnold, H. A. Fisher, H. S. Hendrickson, Robert Grier.

## RALPH BROWN COMPANY'S CATALOGUE.

THE RALPH BROWN COMPANY, 109 New Montgomery street, San Francisco, Cal., has issued a large catalogue of 215 pages, in which the lines of goods handled are attractively and creditably represented. The company's lines include large assortments of Cutlery, Fishing Tackle, Sporting Goods, Guns, Ammunition, Dog Collars and Hardware specialties.

AN effort is being made to reorganize the business of the New York Lock Company, Branford, Conn., which is now in the hands of a trustee. A committee of the bondholders is making an effort to secure the property of the company, including the factory and its equipment, for a new company, to continue the business.



## SUPPLEE HARDWARE COMPANY'S DINNER.

THE annual dinner given by the Supplee Hardware Company, Philadelphia, at its store and warehouse employees was held on Saturday evening, January 21, in the banqueting hall of the restaurant on the top floor of the Bourse Building. More than 200 invitations were issued, but owing to sickness and other engagements a few were absent. The guests assembled in the corridors at 5 o'clock, and at 5.30 the doors of the banqueting hall were thrown open. The tables were arranged with the head table running the entire length of the room, from which extended five spurs, bringing each guest within easy range of Mr. Supplee, who occupied the place of honor at the head table. On either side of him were ranged the heads of departments. Abundant Apollinaris water took the place of anything stronger. During the dinner a number of popular songs were played by the pianist, in which all assembled joined heartily. After the tables were cleared and cigars lighted a smoker, enlivened by some high class vaudeville talent, followed for a couple of hours. Following the entertainment short addresses were made by Mr. Supplee and others, when, with three cheers for their president and the singing of "Auld Lang Syne," the assembly broke up by voting it one of the most successful banquets the house had ever held.

## BEALL BROS.

ARRANGEMENTS are being made for the consolidation of Beall Brothers, manufacturers of Miners' Tools, and the Beall Shovel Company, both of Alton, Ill., and the Charles L. Beall Mfg. Company of East Alton. The new concern will be incorporated as Beall Bros., and the capital stock will be \$158,000. C. L. Beall, who recently started a Mining Tool plant at East Alton, will be taken into the consolidation. The stock of the corporation will be held by members of the family, Edmond Beall, Mrs. Anna M. Beall, J. W. Beall, C. L. Beall, P. B. Gates, Wesley Beall, Jr., and Edmond Beall, Jr. It is the intention of the new corporation to increase the capacity of the plants and to manufacture several new lines of goods.

THE CHICAGO HARDWARE FOUNDRY COMPANY, which was established at North Chicago, Ill., in 1897, and which has been operated as a co-operative establishment in which employees share the profits and losses of the firm, has had a marked growth, its plant covering a large acreage built up with substantial structures. Over 40 stockholders are officers and employees of the company. A recent departure of the company is the publication of a house organ in newspaper form, which is entitled "The Co-operator," in which gossip of the trade both inside and outside the plant is plentifully interspersed among the advertising matter. One of the leading specialties of the company at the present time is the Lott Steam Washing Machine.

The Hardware store heretofore conducted at Langford, S. D., by Keller & Warren has been transferred to McLaughlin & Son, who recently purchased it. The purchasers are old residents of Langford, having resided there for more than a score of years.

The firm of Boutwell Bros, Chamber of Commerce Building, Boston, and Lowell, Mass., dealers in Heavy Hardware, has been incorporated under Massachusetts laws as the Boutwell Bros. Company, with \$75,000 capital stock. The officers are: President, Roland H. Boutwell, Boston; treasurer, Roswell M. Boutwell, Boston, and secretary, Alvah Sturges, Lowell.

Kroll & Kroth, Parkston, S. D., have disposed of their building, land and large stock of Heavy and Shelf Hardware, Farm Machinery and harness to the Parkston Land & Implement Company. The company is composed of well-known business men of Parkston, and now handles one of the largest Hardware and Implement stocks in the southern part of the State.

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## PRICE-LISTS, CIRCULARS, &c.

*Manufacturers in Hardware and related lines are requested to send us duplicate copies of catalogues, price-lists, &c., one copy for our Catalogue Department in New York and another for our London office; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made besides the brief reference to the catalogue or price-list in this column.*

**THE WHITMAN & BARNES MFG. COMPANY, Chicago, Ill.:** Catalogue No. 56, applying especially to the line of Twist Drills, Drop Forged and Screw Wrenches and other Machine Shop Supplies which the company manufactures; also booklet describing the company's line of W. & B. Rubber Horse Shoes and calling attention to their advantages over the ordinary shoe.

**D. ROUND & SON, Cleveland, Ohio:** Catalogue 1904-B, devoted to Chain Blocks, Hoisting Machinery, Hoisting Crabs, Trolleys, Chain Wheels, Chain, Winches, Stone Chains, &c. This firm has been engaged in the manufacture of this line at the same address for over 35 years. Attention is called to the quality of materials and the skill and efficiency of the workmen employed.

**BOONE EXPANSION BOLT WORKS, Port Richmond, Staten Island, N. Y.:** Illustrated catalogue and price-list of Single and Double Expansions and Expansion Bolts. A large variety of these goods is shown adapted to many uses. Expansions are also sold without Bolts. Among the newer goods represented are the Lock Nutted Expansions.

**BUFFALO WIRE WORKS COMPANY, Buffalo, N. Y.:** Catalogues Nos. 5, 6 and 7. The first is intended for the use of the jobbing and Hardware trade; No. 6, for manufacturers and users of Wire Cloth, and No. 7, illustrating Wire Work and Artistic Metal, is intended for the use of contractors and builders. Each catalogue is well adapted to the use for which it is designed.

**C. E. BONNER MFG. COMPANY, Chrisman, Ill.:** Illustrated booklet relating to the Victor Pipe Wrench. This is referred to as "a Pipe Wrench that's different."

**THE GLOBE REGISTER COMPANY, 405 West Fourth street, Cincinnati, Ohio:** Globe Autographic Sales Registers and Manifolders and other useful devices for store and factory.

**THE CARTER-CRUME COMPANY, Niagara Falls, N. Y.:** Catalogue illustrating Invincible Autograph Registers, Manigraph Registers, Niagara Triplicators for bills of lading and order forms in duplicate or triplicate.

**SEIDEL MFG. COMPANY, 811 Chemical Building, St. Louis, Mo.:** Revised catalogue of Sash Pulleys, Steel Sash Ribbon, Showcase Rollers and Sheaves, Showcase and Dumb Waiter Pulley, Scenery Wheels, &c. Since the company's previous catalogue was issued it has added new Sheaves for theatrical scenery, Heavy Frame Pulleys and special Sash Pulleys. On account of the housing feature of the Pulleys, the cord, ribbon or chain cannot run off the wheel or get fast in any manner.

**NORTH BROS. MFG. COMPANY, Philadelphia, Pa.:** Illustrated pamphlet of the company's Twin, Lightning, Gem and Blizzard Ice Cream Freezers, Machine Freezers, Ice Breakers, &c.

**THOS. PEPPLER, Hightstown, N. J.:** Pamphlet relating to Horse Power Sprayers, Riggs' Furrower, Riggs' Plow and Two-Row Sprinkler.

**TROY NICKEL WORKS, Albany, N. Y.:** Thirty-second annual catalogue and price-list devoted to Alaska Stove Trimmings and Hardware. These include Dampers, revolving Towel Rack, Shovels, Pokers and Tongs, Stove Knobs, Handles and Turnkeys, the Gaitley Mincer, &c.

**HARRINGTON CUTLERY COMPANY, Southbridge, Mass.:** Folder entitled "A Killing Affair," in which the story is told of a contest in which the Dexter Butcher Knife, manufactured by the company, sustained its reputation for keen edge cutting qualities.

**THE LLOYD MFG. COMPANY, Minneapolis, Minn.:** Catalogue for 1905 of boys' and girls' Autopedes, Folding Go-Carts, Boys' Buckboards, Steel Express Wagons, Wooden Wagons, Toy Carts, Doll Carriages and Wagons, Sleighs, Porch and Lawn Chairs, Hammocks, Swings,

Screens, &c. The company's plant has been materially enlarged during the past year and a number of new lines have been added to its product.

**THE SCHAIKLE MFG. COMPANY, Elyria, Ohio:** Folder descriptive of the Lou Dillon Tandem Garden Cultivator.

## TRADE ITEMS.

At a meeting of the Board of Directors of the Livingston Nail Company, held at its offices, 104 Reade street, New York, on the 18th inst., the former officers of the company were re-elected for the ensuing year, as follows: Duncan K. Major, president and treasurer; George B. Olney, vice-president; W. L. Cooper, secretary; Fred P. Oliver, assistant treasurer.

At a meeting of the Board of Directors of the Coleman Nail Company, held at its office in Pawtucket, R. I., on the 16th inst., the former officers and Executive Board were re-elected for the ensuing year, as follows: George B. Olney, president; A. H. Sweet, vice-president; Henry B. Dexter, treasurer; Geo. W. Davis, secretary; Geo. B. Olney, Charles B. Payne, Duncan K. Major, Executive Board.

**MELVIN WHITEHALL**, who has been for the last three years connected with Selby, Starr & Co., Peoria, Ill., has been made general manager of the Cassopolis Mfg. Company, maker of grain drills, Cassopolis, Mich.

**THE U. S. Circuit Court of Appeals** for the seventh circuit on the 13th inst. handed down a decree sustaining the Murray patent, under which the Stepladders of the Bicycle Stepladder Company, Chicago, are manufactured and sold. The company states that this decision means that any Ladder built on the principle of sustaining the whole weight practically on the rollers at its lower end and making use of a secondary or guide bearing at the upper end, which serves the purpose of preventing the Ladder from tipping over, is an infringement on the company's patent, this being so whether the upper bearing is a plain hook, a hook in combination with rollers, or rollers with flanges serving the same purpose as the hooks in the Murray patent.

**THE PETERS CARTRIDGE COMPANY**, now occupying the entire third floor of the Pickering Building, Fifth and Main streets, Cincinnati, owing to the growth of its business finds it necessary to secure more commodious office quarters, which it has done by leasing the seventeenth floor of the First National Bank Building, at Fourth and Walnut streets, where it will have 3800 square feet. The new quarters are now being specially fitted and, it is expected, will be ready for occupancy by March 1.

**THE PIKE MFG. COMPANY, Pike, N. H.,** has issued for gratuitous distribution by jobbers and retailers of its large and complete lines of Sharpening Stones for all purposes a revised and enlarged edition of its illustrated booklet of 24 pages on "How to Select and Use Oil Stones." The pamphlet not only gives much expert information of value on Sharpening Stones to the dealer or salesman handling them, but is a good medium of advertising, as the dealer's imprint or business card can be affixed for distribution to consumers.

**J. H. GILHULY, 421 Market street, San Francisco,** has just been appointed sales agent for the States of California, Oregon and Washington for the Youngstown Iron Sheet & Tube Company, Youngstown, Ohio. Mr. Gilhuly also represents as manufacturers' agent Stanley G. Flagg & Co., Philadelphia, Pa.; Williamsport Iron & Nail Company, Williamsport, Pa.; Root Bros. Company, Plymouth, Ohio; Taunton Rivet Company, Taunton, Mass., and other concerns.

**WRIGHTSVILLE HARDWARE COMPANY, Wrightsville, Pa.,** advises us that the new catalogue which it will publish during the present year will contain many new articles which have not heretofore been manufactured by the company.

**E. L. Dufur and T. J. Thompson of Bonesteel, S. D.,** have established a new Hardware store in the town of Gregory, which is one of the new towns in the ceded portion of the Rosebud Indian reservation near Bonesteel.



## BRITISH LETTER.

Offices of *The Iron Age*, HASTINGS HOUSE,  
NORFOLK ST., LONDON, W. C., January 7, 1905.

## The Week's Hardware Trade.

**B**USINESS opens out slowly in the Hardware and Cutlery trades, and, as travelers have as yet hardly resumed their journeys, it is difficult to forecast the immediate future of the trade. Meanwhile there has been a more active demand for Buckets, Tanks, Baths and the general range of Galvanized Hollow Ware. Midland makers have experienced a steady influx of orders for these commodities, but that may be due to the fact that the Bucket Makers' Association, which is centered in Stourbridge, has reached the stage of issuing a new price-list, in which the advances are reported to range from 17½ to 50 per cent. It is not at all unlikely that the explanation of the expansion of business may be found in that fact. On the whole, however, the prospect for the general Hardware trades is promising.

The export trade is more encouraging than it has been for a long time. Although there was need to modify the impression which might have been drawn from the grand totals of the recently published foreign trade returns, there is very little room for doubt that some expansion is taking place in oversea business. Most progress is still being made in the shipments to the South American States, and Continental nations have been better customers in some directions, while South Africa is not yet showing the full advantage of the increased gold output. Less is being done by the colonies there in Galvanized Sheets, Water Pipes—in respect of which the market is considerably less active—Cutlery, Agricultural Engines and Machinery, Sewing and Mining Machines, though in the latter case the fact is not surprising in view of the extensive purchases made in 1903. At the present rate of progress the demand ought soon to broaden out again. There is, however, a much better South African demand for Wire, Tubes and Fittings, and Locomotives and Railway Material, Galvanized Sheets, Cutlery, Hardware, Agricultural Engines and Machinery, Mining Machines and Saddlery.

## Last Year's Trade.

Undoubtedly the year 1904 from every point of view was commercially worse than its predecessor. It has been a year of oscillation and fluctuation. The range of unemployment in all the Hardware and allied industries has been greater and the percentage higher. The first nine months of the year, with the exception of two or three spurts, covered a period of gloom and stagnation. In addition to the shrinkage of the home demand, home manufacturers had to face increasingly severe competition. The trade associations, which played their part when the market was moving up, failed lamentably as a protection on a falling market. It was a case with practically all the Hardware and Cutlery firms of *sauc qui peut*. The improved condition of affairs in Lancashire, owing to the release of the cotton supplies and the good harvest led to an improvement in trade in the final quarter, but, taking the year as a whole, we are all thoroughly glad to be rid of it.

## GENERAL HARDWARE AND TOOLS.

The general adverse conditions naturally affected the very wide range of articles which come under the heading of General Hardware. The building trade also suffered some check, and, as a consequence, there has hardly been so steady a demand for Builders' Ironmongery as has been experienced in recent years. In the general run of small wares, such as Nuts, Bolts, Rivets and Cut Nails, there has been less activity, but in the latter branch more encouragement is derived from the fact that, after one or two futile attempts, manufacturers of Cut Nails have been able to agree upon some form of combination with a view to ending the severe competition which has been one of the things from which they have suffered. Steel Toy manufacturers can only speak of the year as having been moderately steady. The general export demand for Edge Tools and Implements has also

undergone some contraction, as the total shipments for the 11 months at £1,507,629, are £43,621 less than the previous year's total, which stood at £1,551,250. There is thus a decrease of about 2.7 per cent., but it must be remembered that last year's figure represented an increase of 8.3 per cent. on 1902, which, in its turn, was an advance of 5 per cent. on 1901. In view of these circumstances, and the fact that this year's total is £77,252 over that for 1902, the export trade cannot be said to have shown any serious decline, and with the South American States gaining in prosperity the outlook for some of the articles included under this very comprehensive heading is not bad.

## COPPER AND BRASS GOODS.

In the main the market suffered no disturbance owing to the price of the raw metal, which kept moderately steady at about £57 until the end of August. Since then, however, there has occurred the jump of over £10, and everything was tending in the direction of a boom and a return to the prices which prevailed prior to December until the recent scare. The comparatively steady conditions which prevailed throughout the year, though favorable to manufacturers, were not accompanied by any breadth of trade. On the contrary, the demand for the ordinary lines of Copper Goods remained stagnant and was very much below the productive capacity. As a consequence the competition which began in 1903 became more intense. The export market, however, has remained fairly steady. The Brass trades have followed very much the line experienced in Copper. The demand for Brass foundry goods of all kinds has not been sufficient to afford anything like steady full employment, and the result is seen in the fact that the Brass Workers' Union has had a heavier draw on its out of work funds than has ever been known before.

## HOLLOW WARE.

On the whole, notwithstanding some grumblings, the Hollow Ware trade, pure and simple, has not done badly. Of course it has been in streaks rather than throughout the trade. The advance has been largest in unenameled Hollow Ware and in the general range of Hardware goods. Most European countries have taken more from us, but the most striking advance has been in the trade with the three South American Republics—Chile, Brazil and the Argentine. Unenameled Hardware goods have furnished by far the largest proportion of our exports. If there were no other circumstances to consider, then the condition of the Hollow Ware trade might be regarded as very favorable, but experience has shown that manufacturers have been in a complaining state all the year. The home trade has undoubtedly been slack. The unfavorable harvest of 1903 checked the agricultural demand, and the depression in industries checked that of large towns, and as a consequence Ironmongers have purchased most sparingly throughout the year, and the home demand for the general run of Japanned, Tinned and Plain Goods has been far from active. To this cause no doubt is to be attributed the grumbling of which so much has been heard, for it is a commonplace that the home trade is generally several times the dimensions of that which we do with foreign countries.

## THE SHEFFIELD TRADES.

The Cutlery trade, like most other branches of the Sheffield industry, began the year 1904 under the most depressing conditions, among which may be mentioned the still felt effects of the war in limiting purchase power in the home market, the unsettlement in South Africa, and the increasing difficulties of the export trade in contending with the tariffs imposed by foreign countries. The outlook, moreover, was anything but promising. The most sanguine could only say that things had got to such a pass it was scarcely probable they would grow still worse. But that had been the story at any time during 1903, and, as the event proved, things could and did grow worse during the early months of 1904. The completion of the Christmas season work left manufacturers little or nothing to start upon at the beginning of the New Year, and for many months they had to contend with a shrinking trade in the home market. But for the maintenance, generally speaking, of the export trade, with a

distinct improvement in this branch toward the end of the year, it is difficult to say what might have happened to some Sheffield houses. The largest firms, those enjoying world wide reputations, felt the depression to a less extent than the scores of smaller firms and the hundreds of "little mesters," some few of whom, it is regrettable to have to say, have had to call their creditors together, while two or three have become bankrupt. About the end of August matters began to improve somewhat, and the tendency was on the whole upward from that time to the end of the year, though it is to be noted that the Cutlery manufacturers declare the autumn season and Christmas demands to have been smaller in the aggregate than in previous years. The export trade has been remarkable for the excellent business done with the British Colonial and the South American markets. South America and Australia, especially, have done well for the Sheep Shear trade. The great disappointment is South Africa, but the Cutlery trade is by no means the only branch of Sheffield industry to suffer from it. Canada has done an increasing business, but so far as Cutlery is concerned, Sheffield trade with the United States has not been notably good.

#### IVORY AND OTHER HAFTING MATERIALS.

During 1903 Ivory Hafting Material had an easy sale until toward the end of the year, when the Cutlery trade, except for the Christmas season demand, fell off so badly. In spite of the fact that Ivory advanced over 12 per cent. during 1903, no advance was made by Sheffield cutters and dealers in their prices to Cutlery manufacturers. The further advance in the value of Ivory, however, rendered a continuance of this policy impossible, and 1904 has seen successive advances representing something like 40 per cent. above the rates of last year. It is obvious that the effect of this increase will be to strengthen the tendency of Celluloid to drive out the inferior sorts of Ivory as a hafting material, and in fact Celluloid has been in active demand throughout the year. Nevertheless, the Ivory trade is still worth something like £200,000 a year to Sheffield. Stag Horn has been in request throughout the year, particularly for the American market. A fair business has been maintained in Mother of Pearl Haftings, and Bone Scales have been in good request throughout the year.

#### SHEFFIELD TRADE WITH THE UNITED STATES.

Exports of Sheffield products to the United States have been slowly but steadily increasing in value during the last few years. The character of the trade has greatly changed, however, since the days when the American market was the best oversea market for Sheffield Cutlery. Nowadays the American tariff keeps out practically all the ordinary Sheffield manufactures, and the commodities that do go there are either articles of luxury supplied to the moneyed classes who are indifferent as to price, or they are duty free articles, not produced in sufficient quantity by the Americans themselves, or, thirdly, they are specimens of Sheffield manufacture which win their way because they are the best in their own line that can be produced anywhere. With regard to 1904 the American trade was slack in the first three months of the year, the exports in that period showing a substantial reduction as compared with the last quarter of 1903. During the June quarter there was a further decrease, but from July business picked up wonderfully, and this improvement has been well maintained down to the end of the year. Nevertheless, the falling off in the earlier part of the year was so serious that a temporary check has been given to the growth of exports to the United States.

W. D. BIGGERS, who for the past two and one-half years has been connected with the Zelnicker Supply Company, and previous to that time for nearly 20 years with the Simmons Hardware Company, St. Louis, as buyer and manager of its wholesale city sales department, has embarked in business for himself in the Security Building, St. Louis, acting as sales agent, selling to jobbers and railroads. Among other agencies already secured by Mr. Biggers is that of the Standard Truck & Forging Company, St. Louis. Mr. Biggers has taken L. G. Blackmer into partnership.

## HARDWARE MERCHANTS' AND MANUFACTURERS' ASSOCIATION.

THE nineteenth annual banquet of the Hardware Merchants' and Manufacturers' Association of Philadelphia was held at the Bellevue-Stratford Hotel in that city Wednesday evening, 18th inst. At this banquet the association departed from its former custom by including as its guests the ladies—wives, daughters and friends of its members. An informal reception was held by the officers of the association in the Red Room of the hotel previous to the dinner, after which the members and guests proceeded to the Clover Room, where the banquet was spread. Carnations predominated in the floral decorations, while the various tables were profusely decorated with Hardware novelties, furnished by the manufacturers, which were afterward distributed to the participants as souvenirs of the occasion. Rev. John R. Davies, D. D., invoked the blessing and T. James Fernley acted as toastmaster.

The menu card was unique, the cover design representing on its upper half the typical stock drawers of the Hardware merchant, with water color paintings of the contents



THOS. DEVLIN.

represented as fastened to the front of the drawers, Screw Eyes, Bolts, Locks, Pincers, Shears, Staples and a variety of other articles being shown. Represented as suspended by hooks from a shelf were water color reproductions of a Brace, File, Screw Driver, Hammer, Square, Wrench and other Tools. In the center of the cover was the embossed monogram of the association in blue and gold, while the lower portion of the cover contained the inscription in pen and ink lettering: "Nineteenth Annual Banquet, Hardware Merchants' and Manufacturers' Association of Philadelphia. The Bellevue-Stratford. January 18, 1905." At the bottom was a neat calendar pad for the current year, the menu having a ring for hanging up to serve as a calendar.

At the close of the banquet the ladies, who had in the meantime been shown the many various points of interest about the new Bellevue-Stratford Hotel and had been served with luncheon in the Red Room, joined the banqueters to hear the various speakers of the evening. Mr. Devlin, in making his address of welcome, said:

#### Address of President Devlin.

For the second time I have been elected presiding officer of this association. I am conscious the honor conferred upon me is intended as a compliment to the company I represent and not to me personally. Our company fully appreciates the honor paid to one of its officers, and in behalf of the company and its name I tender to you my sincere thanks. For the information of the guests I think it proper to state that the Hardware Merchants' and Manufacturers' Association is composed of the



largest jobbers of Hardware in Pennsylvania as well as some of the largest manufacturers in their lines in the world. The combined capital of our members figures well up to the \$100,000,000 mark, producing and distributing goods amounting to a great many millions of dollars per annum, and giving employment to thousands of artisans and mechanics whose ingenuity, skill and pluck stand out among their fellow workmen of any country on God's earth. The combination of the American manufacturer, merchant and mechanic, backed by ample capital, bids fair to rule the world of commerce in the very near future, if that point has not already been reached. And who would not consider it a very great honor to preside over the deliberations of such a body of business men as composes our membership?

The Hardware Merchants' and Manufacturers' Association is first of all a social organization. We meet and talk over business matters and consider business conditions. We all know what a handshake and half hour's chat with a competitor means. It has a kind of spring in it that raises to the surface our best feelings and very often makes warm friends of competitors who were perhaps not acquainted before they met as members of the association, and they may have been suspicious or jealous rivals, if nothing worse; but as members of this association they have become almost general partners in a common calling.

It is with the greatest possible pleasure that I, on behalf of the association, extend to your honor Dr. Davies, ladies and invited guests, a most cordial and heartfelt welcome to this our annual banquet and to express to you how very much we appreciate your presence here to-night.

To the ladies who grace this occasion by their presence, and thereby make the whole affair more enjoyable, I, as the representative of the association, tender to you special thanks. For your information I would say that we have no lady members, and fearing you might suppose this little affair was gotten up to secure your consent to become members, I protest, as that is not the object, but rather to show you when we go out "of nights" to attend one of these Hardware meetings you can see by the company we keep it is all right, and that no harm will come to us when we are with such good fellows as the members of this association. I make this explanation because this is our first banquet at which ladies have been present, but I hope and trust it will not be the last one, for I believe it to be good, rational and proper for us to have our wives, daughters or sweethearts with us on all such occasions.

I can assure you, ladies and gentlemen, that this is a very trying occasion for me, especially when I reflect upon the great merchants and manufacturers who have preceded me in the office of president. Their greatness will be recognized as I mention them in the order of service—Messrs. Lloyd, Biddle, Plumb, Supplee, Disston, Ritter, McCaffrey and Peters.

Death has removed from our ranks four of our most highly esteemed members within a year—Edward Darby, Edward K. Tryon, Fayette R. Plumb and Wm. C. Peters. Mr. Darby lived to a good old age, but Mr. Tryon was called away very suddenly and while yet comparatively young. Due notice of their demise was taken at the time by our association. Last week, upon notice of Mr. Plumb's death, our association met and passed resolutions extending to the family our sincere regret and condolence.

Death under the most favorable circumstance is indeed sad, but in Mr. Plumb's death the most pathetic fact is that as a loving father he journeyed with his sick child to a sanitarium in Colorado and while *en route* contracted a cold. Pneumonia resulted and he succumbed to it in about 48 hours. Picture for yourself that poor, grief stricken daughter among strangers preparing to retrace her steps, bringing with her that once loving, happy and cheerful father now cold in death. That child and the family have my heartfelt sympathy and the sympathy of every member of this association. I knew Mr. Plumb as a member of this association and as its president, and always found him to be a gentleman and a true and warm friend.

It is an old saying "Troubles do not come alone." We are this week called upon to mourn the loss of another esteemed and beloved member of our association—William C. Peters. He had been in poor health for some time. Last year he, in company with his wife and daughters, took a trip to Europe, hoping to be benefited by a sea voyage and a complete change of environment. While in Rome he was stricken with typhoid fever, from which he recovered and subsequently returned to his own beloved home to die. Mr. Peters was president of this association for two years, and I had the honor to serve as vice-president under his able and earnest administration. Mr. Peters was a broad minded, liberal, Christian gentleman, loved his fellow man as a brother, bore malice to none and good will to all, and was known for his integrity and unsullied honor in all his dealings. He was the type of a man we might well copy with profit to ourselves.

#### Other Addresses.

At the conclusion of Mr. Devlin's address he was presented with an ivory gavel, the gift of a number of friends. C. W. Asbury made the presentation speech, Mr. Devlin replying in a fitting manner.

Mr. Fernley, in opening his remarks as toastmaster, paid tribute to the deceased members of the past year: Edward Darby, Edw. K. Tryon, Fayette R. Plumb and William C. Peters. In memoriam the quartette sang, "Lead, Kindly Light," the guests remaining standing during the rendition.

The toastmaster then introduced Hon. John Weaver, Mayor of Philadelphia, who responded to the toast "Our City and Its Commercial Interests." Mr. Weaver spoke on the advantages of the city commercially, its need for further improvement both in a business and artistic manner, its tax rate and the method of finance. The necessity of better shipping facilities was also commented on. Michael J. Ryan responded to the toast "Our State and Its Resources" in an eloquent manner, speaking of the great past and even greater future of the Commonwealth.

Rev. John R. Davies, D.D., responded to "Opening of the New World." He described the rapid advances made by Japan in the recent years, and prophesied an equally great forward stride by China at the conclusion of the present Russian-Japanese conflict. China, he said, is already beginning to modernize her methods in many ways. The Japanese aspire to the position of the great manufacturing nation of the East, and will no doubt be the molding force in the affairs along the shores of Asia. In connection with the possibilities for trade that will arise, he said, we should be active participators for the great volume of business, and in this we would be greatly aided by the Panama Canal when completed.

Hon. J. Hampton Moore responded to the toast "Our Industries at Home and Abroad," and Hon. R. O. Moon to the toast "Commercial Dominance." The banquet came to a close with the usual singing of "Auld Lang Syne."

#### Souvenirs.

Souvenirs were furnished for the occasion by the following manufacturers:

MCCAFFREY FILE COMPANY, Scissors.  
NATIONAL CUTLERY COMPANY, Scissors.  
G. & H. BARNETT COMPANY, Files.  
NATIONAL SPECIALTY MFG. COMPANY, Coffee Mills and Food Choppers.  
P. & F. CORBIN, Souvenir books of Philadelphia.  
ENTERPRISE MFG. COMPANY, Coffee Mills and Choppers.  
HENRY DISSTON & SONS, Saws, Files, Levels, Squares, &c.  
MILLER LOCK COMPANY, Crusader Locks.  
MAYER & Co., Manicure Files.  
NORTH BROS. MFG. COMPANY, Ratchet Screw Drivers.  
JOS. DIXON CRUCIBLE COMPANY, Lead Pencils.  
C. T. HAM MFG. COMPANY, Nickel Plated Lanterns.  
STANLEY RULE & LEVEL COMPANY, Planes and Rules.  
WINCHESTER REPEATING ARMS COMPANY, Cannon.

The ladies were presented with a specially prepared envelope package containing a number of the above articles and one of the National Cutlery Company's new pattern solid Steel Scissors.

During the evening a number of vocal selections were rendered by a quartette composed of Paul Volkman, Chas. A. Huff, Jno. C. McCausland and Frank W. Huff.

The Committee of Arrangements, to whom great credit

is due for a most entertaining and enjoyable evening, consisted of Harry C. Disston, Walter E. Devlin, C. W. Asbury, Jas. H. Ritter, E. S. Jackson, Jos. J. McCaffrey and Jno. L. Clayton.

### THE DEATH OF FAYETTE R. PLUMB.

**T**HE Executive Committee of the American Hardware Manufacturers' Association has adopted the following resolutions relative to the death of Fayette R. Plumb on the 7th inst.:

*Whereas*, Divine Providence has removed from our counsels Fayette R. Plumb, the first president of this association, whose services were so conspicuous in laying the broad foundations of principle upon which we were established, and who for two years directed the affairs of the association as its chief executive with such marked success, and who has since served us so well and continuously as a member of the Advisory Board; and,

*Whereas*, His removal causes us to appreciate most keenly those traits of high moral and business character with which he was so munificently endowed by his Creator; now therefore be it

*Resolved*, That we, the Executive Committee of the American Hardware Manufacturers' Association, express our affectionate appreciation of his noble and useful character, his pleasant personality, his untiring zeal and indefatigable industry, his genial disposition and the personal affection felt for him by every member; our recognition in him of those broad and progressive qualities that contributed so largely to the growth and prosperity of the association.

*Resolved*, That we give expression to a sense of the deep personal and official loss we feel, and extend to the members of his bereaved family our sincere sympathy in the greater loss they have sustained.

*Resolved*, That these resolutions be entered upon the permanent records of the association as testimony of the high esteem and great affection of all members for our first president, and, further, that a copy of these resolutions be presented to his family as an expression of our sympathy for them in the great loss we mutually and severally have suffered.

### MISCELLANEOUS NOTES.

#### Musket for Indoor Target Practice.

Winchester Repeating Arms Company, New Haven, Conn., has put on the market a new .22-caliber single shot musket, designed especially for indoor target practice by members of militia organizations. In its barrel length, pull of trigger, weight and adaptation of sights the musket is nearly identical, we are advised, with the Krag-Jorgensen rifle. The new rifle will be equipped with a regular musket rear sight, unless ordered otherwise. The musket as regularly furnished is sighted at 50 feet, but is accurate at much longer ranges. The length of the musket is 44 inches over all; length of pull, 13 $\frac{1}{4}$  inches; with a drop at comb of 1 $\frac{3}{4}$  inches and drop at heel 2 $\frac{1}{2}$  inches. The weight is about 8 $\frac{1}{2}$  pounds.

#### Fairfield Lawn Swing Company.

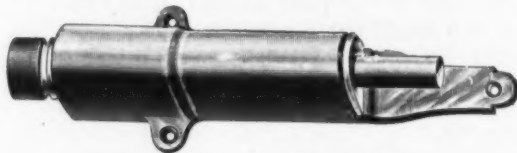
Fairfield Lawn Swing Company, Brunswick, Maine, manufacturer of the well-known Fairfield swing, announces that it has been able to obtain a large supply of clear mountain spruce and is now making its swings of that wood, which is light, strong and flexible. A new departure for this season will be a line of canopies for the swings. The general line of wood furniture has been enlarged and a new catalogue issued. The latter is known as the "Swing Book," and has been especially prepared for the hardware trade.

#### Klean-Al.

The Klean-Al Mfg. Company, 36 Vesey street, New York, is manufacturing the Klean-al (clean all) paste for instantly dissolving and removing from the hands machine grease, grime, paint, printers' ink, &c. It is guaranteed by the maker not to injure the most sensitive skin; demonstrators in showing it rubbing the preparation on their lips, teeth, &c., to show absence of harmful ingredients. It is especially recommended for mechanics, automobilists, &c., as a quick and harmless cleanser. It is put up in cans to retail at 10 and 25 cents each. Samples can be obtained for the asking, and on orders for over \$25 worth a certain quantity of free samples with circulars is supplied to dealers.

### Superior Door Holder.

The Superior Spring Hinge Company, 17 South Canal street, Chicago, Ill., is placing on the market a new door holder, which we illustrate. The device is secured to the door near the floor by means of three screws. The plunger is depressed to a point where the rubber shoe engages the floor, where it is held firmly in place by means of a hinged plate at the top of the cylindrical box. The slightest pressure on this plate releases the plunger and a spring lifts it high up, from the floor, per-

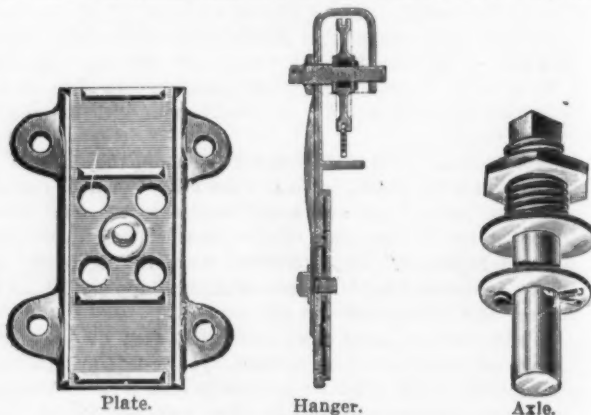


Superior Door Holder.

mitting the door to close. Inequalities in the floor level are provided against by means of a concentric spring which provides for about  $\frac{1}{8}$  inch play between the shoe and the plunger. When the rubber shoe at the foot of the device wears out it can be replaced by the householder by removing a pin, which releases a short section of brass tubing, round which the rubber is fitted. The repair part, furnished by the manufacturer, consists of a new piece of brass tubing with its rubber washer in place. This is easily inserted in place and locked there by restoring the pin to its former position. The device is noiseless in action, and both locking and unlocking are done by foot pressure, the pressure being so light in either case that a small child can operate it. The holder is sold in a variety of sizes and finishes. The same firm makes the Superior cylindrical floor hinge.

### Wilbern Door Hangers.

Stowell Mfg. & Foundry Company, South Milwaukee, Wis., is offering the door hanger illustrated in the accompanying cuts. It has both lateral and vertical adjustment. The lateral adjustment is produced by means of the threaded axle, which is held rigid by means of a nut so that the wheels and rollers can turn about it. To ad-



Wilbern Door Hangers.

just the door the nut is loosened, allowing the axle to be turned with a wrench, this operation moving the entire door. By means of this adjustment doors can be hung close against the wall, or can be moved away from the wall when necessary to prevent chafing. The vertical adjustment is procured by means of a plate and a ratchet on the depending arm of the hanger. The plate is shown as when bolted to the door, and is independent of the rest of the hanger. The hanger and the plate are held together by means of a cap screw, the protruding teeth of the plate engaging the ratchet. To adjust the door, this cap screw is loosened, allowing the hanger to drop free. The adjustment permits of doors being raised and lowered and prevents scraping, and also allows double doors to be fitted snugly together. These two forms of adjustment are used in the Wilbern fire door, warehouse and baggage car door hangers, also in the company's No. 0 barn door hanger.



### Wide Runner Snow Skates.

The Handy Things Company, Ludington, Mich., for whom W. A. Lawrence & Co., 10 Warren street, New York, are direct representatives, has put on the market

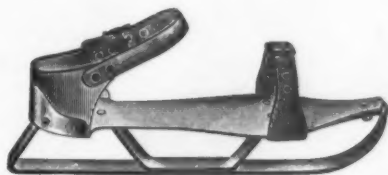


Fig. 1.—Snow Skate for Girls.

wide runner skates for boys and girls, as here illustrated. They are intended for skating on snow, ice or sleet as it is found on city streets, sidewalks, &c., and in fact wherever the regular ice skate would be likely to cut through quickly. They can also be used for coasting wherever suitable snow covered grades are found, the point being made by the manufacturer that thus children can get their favorite exercise without risking them-

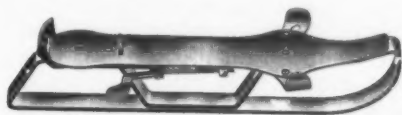


Fig. 2.—All Clamp Boys' Skate.

selves on dangerous rivers, lakes and ponds. The runners are made of special high quality steel,  $\frac{3}{4}$  inches wide and are well finished, the construction being extra strong to resist hard usage. The girls' style has russet leather straps and tops 7, 8, 9 and 10 inches long. The boys' skate has lever clamps, which simultaneously secure the skate to both sole and heel, made in 9, 10 and 11 inch sizes.

### Improved Bailey Planes.

The Stanley Rule & Level Company, New Britain, Conn., and 107 Chambers street, New York, has re-modeled and greatly improved the construction of its well-known line of Bailey planes, as shown herewith,

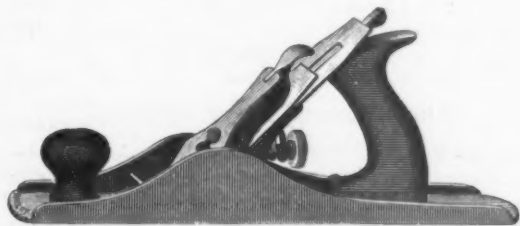


Fig. 1.—Bailey Jack Plane Complete.

Fig. 1 illustrating the jack complete, while Figs. 2 to 4 give the detailed parts of a smoothing plane. The new features are betterments suggested by long experience and carried out for the purpose of making the tool practically one solid whole in use by means of increased stock at the proper points, there being machined surfaces in the interior mechanism to make perfect contact. Fig.

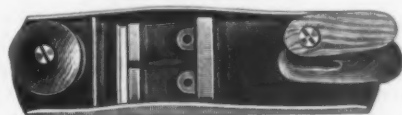


Fig. 2.—Bottom of Smooth Plane.

2 shows the machined surfaces on which the frogs (Fig. 3) rest, and cross ribs, which strengthen the sides and bottom of plane. The third rib connects the two mentioned above. On either side of this third rib there is

a boss in the casting, in which the screws holding the frog in place engage. Fig. 3 is a view of the plane bottom with side cut away, showing thickness of metal

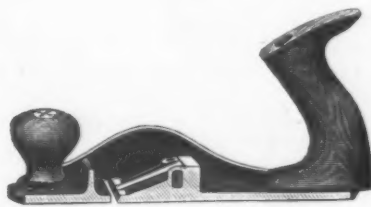


Fig. 3.—Side View of Same Part.

where frog is screwed fast. This method of securing the frog prevents the face of the plane being drawn out of true and also supports the frog close to the mouth.

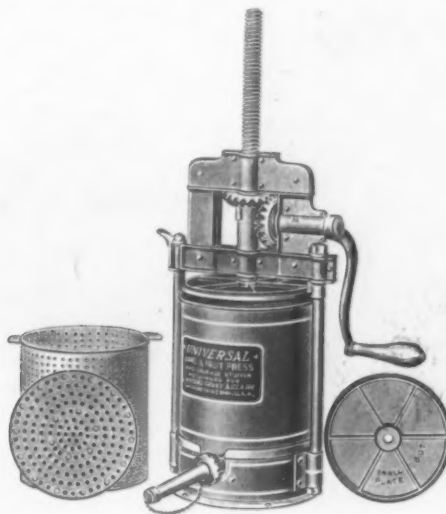


Fig. 4.—Cutter Resting on Iron Frog.

Fig. 4 illustrates the cutter resting on the iron frog, being supported down to the heel of the bevel of cutting edge.

### The Universal Lard and Fruit Press and Sausage Stuffer.

Landers, Frary & Clark, New Britain, Conn., are putting on the market the steel press shown herewith. The bowl is made from a single piece of sheet steel drawn up in dies to insure absolute uniformity in size and to permit a close fit between the sides of the plunger plate



The Universal Lard and Fruit Press and Sausage Stuffer.

and the cylinder. The top can be swung around, permitting the machine to be filled where it stands, while the bowl can easily be taken out to be filled, emptied or cleaned. The point is made that the steel construction has the advantage of being light, strong and unbreakable; also that as there is a saving in weight of about 15 pounds on each press freight charges are reduced. The diminished weight of the press will also be appreciated by housekeepers. The machine is made in two sizes, to hold 4 and 8 quarts, respectively.

### New Departure Hubs and Coaster Brakes.

The New Departure Mfg. Company, Bristol, Conn., for whom John H. Graham & Co., 113 Chambers street, New York, are direct representatives, has recently put on the market several new coaster brakes and hubs built on the principles of their standard brakes, but having new features. Figs. 1 and 2 illustrate also a line of



Fig. 1.—Front Hub, Models M and F.

plain front and rear hubs having the lines of the regular New Departure coaster and brake. Fig. 1 represents models M and F, which differ only in size, M for regular bicycles and F, heavier in proportion, for motor and tandem bicycles. Fig. 2 shows the rear, or sprocket, hub, having sprocket, set nut, axle cones, nuts, washers, &c., the same as and interchangeable with their regular coaster brake parts, of the same high grade and fully

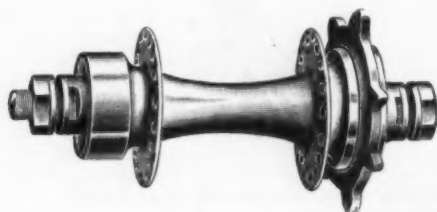


Fig. 2.—Rear Hub, Model R.

guaranteed. The spoke holes for M hub are 28, 32 and 36 in number; for F and R hubs, 28, 32, 36 and 40. In model R the chain lines are  $1\frac{1}{8}$ ,  $1\frac{1}{2}$ ,  $1\frac{3}{4}$  and  $1\frac{1}{4}$  inches, with sprockets 1 inch pitch, 7 to 12 tooth;  $\frac{1}{2}$  inch pitch, 12 to 24 tooth, and  $\frac{5}{8}$  inch pitch, 11 to 18 tooth, smaller than 1-inch pitch being mainly for the foreign market. Fig. 3 is a representation of the company's model B. B. motor cycle and tandem coaster brake. It is similar to the regular New Departure coaster and brake, model A, in a general way, except that in the braking end there

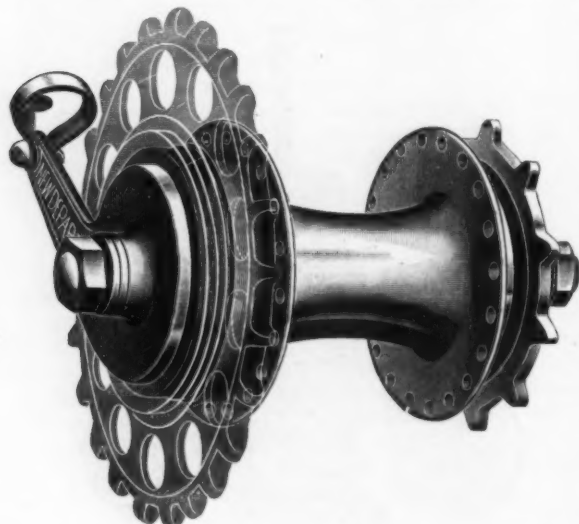


Fig. 3.—Motor Cycle and Tandem Coaster Brake, Model B B.

are six rings instead of three and a braking power of as  $3\frac{1}{2}$  is to 1 in the regular hub. The axle is  $\frac{1}{2}$  inch diameter instead of  $\frac{3}{8}$  inch, and other parts are proportionately larger. The hub, it will be seen, is fitted with an additional sprocket on the motor side for chain driven motor cycles, model B being the same hub without the extra sprocket, and is suitable for hand driven motor cycles and tandems. There are seven chain lines,  $1\frac{1}{4}$  to  $2\frac{1}{2}$  inches, inclusive, and pitches of 1,  $\frac{1}{2}$  and  $\frac{5}{8}$  inch. Special sprockets can also be provided for tandems. Fig. 4 is the New Departure free wheel hub, to be used in connection with a hand brake, which is little sold here,

but is popular in Great Britain, France, &c. The illustration shows models H and K, which are *fac-simile* in pattern and internal mechanism, H being for regular bicycles and K for motor and tandem cycles. With this hub a bicycle can be propelled and coasted, but controlled only



Fig. 4.—New Departure Free Wheel Rear Hub.

through the application of any of the various forms of hand or foot brakes.

### Ohio Folding Handle Drawing Knife.

Ohio Tool Company, Columbus, Ohio, has recently put on the market a line of folding handle drawing knives, as herewith illustrated. The important features of the knife are simplicity and strength just where it is needed, the manufacturer explains. The ratchet adjustment permits the handles to be set at a variety of angles. The handles are set in such a way, it is remarked, as to avoid the strain and tension peculiar to the ordinary drawing

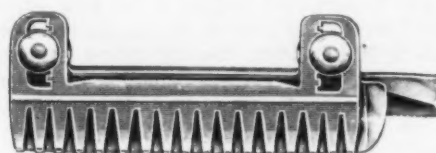


Ohio Folding Handle Drawing Knife.

knife, and this allows the tool to be held in the natural way while in use. When the handles are folded the knife is in a compact form for a carpenter's outfit. The knives are made from a high grade of tool steel, and are treated and tempered by an improved process to insure uniformity of temper and a correct cutting edge.

### The Shavezy Razor Guard.

The razor guard shown herewith is designed to be used in connection with any razor, either narrow or wide blade. It is quickly adjusted to any width of blade, instantly removable and changeable for a right or left hand shave. The adjustment for blades of different widths is accomplished by a rack and pinion, the slotted screw heads being turned with a screw driver-like key, or a small screw driver. The guard is light, and is made of



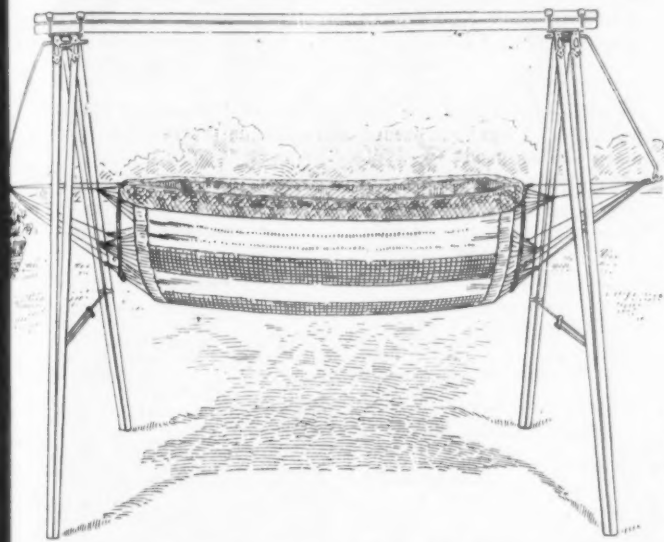
The Shavezy Razor Guard.

spring brass, heavily nickel plated. Among the claims made by the manufacturer are the following: That it is impossible for a person to cut himself when the guard is properly adjusted; that it does away with any nervousness or fear, and that the razor can be drawn boldly and in a slanting direction across the face; also that the guard strengthens the thinnest hollow ground blade so that it easily cuts the heaviest beard without the razor chattering. The device is offered by the Shavezy Company, 286-290 Graham street, Brooklyn, N. Y.



### Infants' Hammock and Hammock Support.

I. E. Palmer, Middletown, Conn., is putting on the market the infant's hammock, hammock support and mosquito net, illustrated herewith. Both open and close



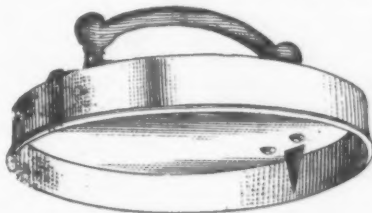
Infants' Hammock and Hammock Support.

woven hammocks are furnished in all white or in a combination of pink, blue and white. The support stands 48 inches high; the backbone is 48 inches long, but is furnished with extension hooks, giving a hammock spread of 64 inches, which is just sufficient length to properly hang the hammock.

### Puritan Can Opener and Cover.

The accompanying illustration shows a can opener and cover for condensed milk cans being manufactured and placed on the market by the H. von Uffel Mfg. Company, 512 Commerce street, Philadelphia. The cover will fit any size condensed milk can and besides keeping the contents pure and free from communication of odors, flies and contamination incident to exposure, it prevents evaporation. The covers are made of heavy coated tin plate. The handle of malleable iron is riveted to the cover in one piece; the tempered steel cutter protrudes through the cover, as shown in the cut, and is automatic-

ally locked in the handle, so that it cannot get loose or out of alignment, therefore cutting a clean, smooth circle, the cutting operation being done by simply turning the entire cover around by the handle. The covers are fur-

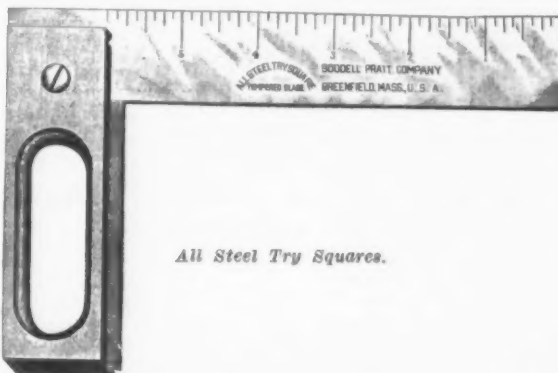


Puritan Can Opener and Cover.

nished in two styles, one plain tinned, the other nickel plated. There being no soldered joints, the cover can be cleaned and dried by heat without damage in any way.

### All Steel Try Squares.

The all steel try square, for use by carpenters and wood workers, shown herewith, has a tempered blade. The beam is provided with a patent rest so that the square will lie flat on the work and stay flat without being held in position, a feature which will no doubt be appreciated. The graduations are put on with dividing



All Steel Try Squares.

engines, the accuracy of which is vouched for by the maker. The handle is well finished and nickel plated, and the blade is highly polished. The square is also made without graduations, both styles being furnished in 6, 8 and 10 inch sizes, packed one in a box. These squares are put on the market by Goodell-Pratt Company, Greenfield, Mass.

## PAINTS, OILS AND COLORS

### White Lead, Zinc, &c.—

Lead, English white, in Oil..	9 1/2 @ 9 1/4
Lead, American white, in Oil:	
Lots of 500 lb or over.....	@ 6 1/2
Lots less than 500 lb.....	@ 7
In Barrels, in oil, 25 lb tin	@ 6
paids, add to keg price.....	@ 1/2
Lead, White, in oil, 12 1/2 lb tin	
paids, add to keg price.....	@ 1
Lead, White, in oil, 1 to 5 lb	
assorted tins, add to keg price	@ 1 1/4
Lead, American, Terms: For lots 12	
tons and over 1/4¢ rebate; and 2¢ for	
cash if paid in 15 days from date of	
invoice; for lots of 500 lbs. and over	
2¢ for cash if paid in 15 days from	
date of invoice, for lots of less than	
500 lbs. net.....	@ 6
Lead, White, Dry in bbls.....	@ 6
Zinc, American, dry.....	4 1/2 @ 4 1/4
Zinc, French:	
Paris, Red Seal, dry.....	5 1/2
Paris, Green Seal, dry.....	5 1/2
Antwerp, Red Seal, dry.....	7 1/2
Antwerp, Green Seal, dry.....	6 1/2
Zinc, V. M. French, in Poppy Oil:	
Green Seal:	
Lots of 1 ton and over.....	11 1/2 @ 12 1/2
Lots of less than 1 ton.....	12 1/2 @ 12 1/2
Discounts.—French Zinc.—Discounts	
to buyers of 10 bbl. lots of one or mixed	
grades, 1%; 25 bbls., 2%; 50 bbls., 4%.	

### Dry Colors—

Black, Carbon.....	5 @ 10
Black, Drop, Amer.....	4 @ 6
Black, Drop, Eng.....	5 @ 15
Black, Ivory.....	16 @ 20
Black, Com.....	4 1/2 @ 6
Blue, Celestial.....	4 @ 6
Blue, Chinese.....	2 @ 32
Blue, Prussian.....	2 @ 32
Blue, Ultramarine.....	4 @ 15
Blue, Ultramarine.....	4 @ 15
Brown, Spanish.....	4 @ 1
Carmine, No. 10.....	\$3.50 @ 4.00
Green, Chrome, ordinary.....	3 1/2 @ 6

Green, Chrome, pure.....	17 @ 15
Lead, Red bbls., 1/2 bbls. and kegs:	
Lots 500 lb or over.....	@ 6 1/2
Lots less than 500 lb.....	@ 7
Litnarge, bbls., 1/2 bbls. and kegs:	
Lots 500 lb or over.....	@ 6 1/2
Lots less than 500 lb.....	@ 7
Ocher, American.....	@ 10 \$8.50 @ 16.00
Ocher, American Golden.....	2 1/2 @ 3 1/2
Ocher, French.....	1 1/2 @ 2 1/2
Ocher, Foreign Golden.....	3 @ 4
Orange Mineral, English.....	8 1/2 @ 10 1/4
Orange Mineral, French.....	7 @ 10
Orange Mineral, German.....	8 @ 8 1/2
Orange Mineral, American.....	8 @ 8 1/2
Red, Indian, American.....	3 @ 3 1/2
Red, Turkey, English.....	4 @ 10
Red, Tuscan, English.....	7 @ 10
Red, Venetian, Amer.....	@ 100 lb \$0.50 @ 1.25
Red, Venetian, English, 100 lb	\$1.15 @ 1.75
Sienna, Italian, Burnt and	
Powdered.....	3 @ 9 1/4
Sienna, Ital. Raw, Powd.....	3 @ 6 1/2
Sienna, American, Raw.....	1 1/2 @ 2
Sienna, American, Burnt and	
Powdered.....	1 1/2 @ 2
Talc, French.....	@ 100 \$20.00 @ 35.00
Talc, American.....	@ 100 \$13.75 @ 25.00
Terra Alba, French.....	@ 100 lb 90 @ 1.00
Terra Alba, English.....	@ 100 lb 90 @ 1.00
Terra Alba, American.....	@ 100
Th. No. 1.....	60 @ 70
Terra Alba, American.....	@ 100
Th. No. 2.....	45 @ 60
Umber, Turkey, Raw & Pow.....	2 1/2 @ 3 1/2
Umber, Burnt, Amer.....	1 1/2 @ 2
Umber, Raw, Amer.....	1 1/2 @ 2
Yellow, Chrome.....	11 @ 14
Vermilion, American Lead.....	10 @ 25
Vermilion, Quicksilver, bulk.....	@ 65
Vermilion, English, Import.....	75 @ 80
Vermilion, Chinese.....	\$0.90 @ 1.00

### Colors in Oil—

Black, Lampblack.....	12 @ 14
Blue, Chinese.....	2 @ 32
Blue, Prussian.....	2 @ 32
Blue, Ultramarine.....	4 @ 15
Brown, Vandyke.....	11 @ 14

Green, Chrome.....	10 @ 15
Green, Paris.....	@ 24
Sienna, Raw.....	12 @ 15
Sienna, Burnt.....	12 @ 15
Umber, Raw.....	11 @ 14
Umber, Burnt.....	11 @ 14

### Miscellaneous—

Barytes, White, Foreign.....	@ 100 \$17.50 @ 19.00
Barytes, Amer. floated.....	@ 100 \$17.00 @ 18.50
Barytes, Crude, No. 1.....	@ 100 \$10.00 @ 11.00
Chalk, in bulk.....	@ 100 \$3.00 @ 3.25
Chalk, in bbls.....	@ 100 \$3.00 @ 3.25
Cobalt, Oxide.....	@ 100 \$11.00 @ 17.00
Whiting, Common.....	@ 100 \$4.50 @ 4.8
Whiting, Gilders.....	@ 100 \$5.50 @ 5.7
Whiting, Ex. Gilders.....	@ 100 \$5.80 @ 6.0

### Putty—

In bladders.....	@ 100 \$1.00 @ 1.15
In cans, 1 lb to 5 lb.....	2 1/2 @ 4
In cans, 12 1/2 to 25 lb.....	1 1/2 @ 2

### Spirits Turpentine—

In Oil bbls.....	55 @ 55 1/2
In machine bbls.....	55 1/2 @ 56

### Glue—

Cabinet.....	11 @ 15
Common Bone.....	6 @ 8
Extra White.....	18 @ 24
Foot Stock, White.....	11 @ 14
Foot Stock, Brown.....	7 @ 10
German Hide.....	12 @ 18
French.....	10 @ 40
Irish.....	13 @ 16
Low Grade.....	8 @ 11
Medium White.....	14 @ 17

### Gum Shellac—

Bleached Commercial.....	36 @ 37
Bone Dried.....	47 @ 48
Button.....	45 @ 60
Diamond I.....	53 @ 54
Fine Orange.....	45 @ 47
A. C. Garnet.....	49 @ 51
D. C.....	50 @ 51
Octagon B.....	50 @ 51
T. N.....	38 @ 39

### V. S. O.....

### Animal, Fish and Vegetable Oils—

Linseed, City, raw.....	43 @ 44
Linseed, City, boiled.....	45 @ 46
Linseed, State and West'n raw.....	41 @ 42
Linseed, raw Calcutta seed.....	45 @ 46
Lard, Prime, Winter.....	56 @ 58
Lard, Extra No. 1.....	48 @ 49
Lard, No. 2.....	36 @ 38
Cotton-seed, Crude, f.o.b. mills.....	16 1/2 @ 17
Cotton-seed, Summer Yellow.....	24 @ 25
off grades.....	24 @ 25 1/2
Sperm, Crude.....	60 @ 61
Sperm, Natural Spring.....	@ 61
Sperm, Bleached Spring.....	@ 61
Sperm, Natural Winter.....	62 @ 64
Sperm, Bleached Winter.....	65 @ 67
Tallow, Prime.....	48 @ 50
Whale, Crude.....	45 @ 46
Whale, Natural Winter.....	45 @ 46
Whale, Bleached Winter.....	47 @ 48
Menhaden, Brown, Strained.....	27 @ 28
Menhaden, Light, Strained.....	28 @ 29
Menhaden, Bleached Winter.....	30 @ 32
Menhaden, Ex-Hid. Winter.....	32 @ 33
Menhaden, Southern.....	15 1/2 @ 20
Cocconut, Ceylon.....	@ 100 \$6 @ 7
Cocconut, Coch.....	@ 100 \$6 @ 7 1/2
Cod, Domestic, Prime.....	36 @ 38
Cod, Newfoundland.....	39 @ 41
Red Elaine.....	31 @ 33
Red Saponified.....	@ 100 \$4 @ 5
Olive, Italian, bbls.....	33 @ 36
Neatfoot, prime.....	50 @ 51
Palm, prime Logos.....	@ 100 \$5 @ 6 1/2

### Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test.....	10 1/2 @ 11 1/2
Black, 29 gravity, 15 cold test.....	11 1/2 @ 12 1/2
Black, Summer.....	10 1/2 @ 11 1/2
Cylinder, light filtered.....	18 @ 19
Cylinder, dark filtered.....	16 @ 17
Paraffine, 90-907 gravity.....	12 1/2 @ 13
Paraffine, 903 gravity.....	11 1/2 @ 12
Paraffine, 863 gravity.....	9 1/2 @ 9 1/2
Paraffine, Red.....	11 1/2 @ 13
In small lots 1/4¢ advance.	

# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33 $\frac{1}{2}$ %, @ 33 $\frac{1}{2}$ %, & 10% signifies

that the price of the goods in question ranges from 33 $\frac{1}{2}$  per cent. discount to 33 $\frac{1}{2}$  and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1904, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters, Blind—

Domestic,  $\frac{1}{2}$  doz. \$3.00.....33 $\frac{1}{2}$ %  
North's.....10%  
Zimmerman's—See Fasteners, Blind.

## Window Stop—

Ives' Patent.....35%  
Taplin's Perfection.....35%

**Ammunition**—See Caps, Cartridges, Shells, &c.

## Anvils—American—

Eagle Anvil..... $\frac{1}{2}$  lb 7 $\frac{1}{2}$ @7 $\frac{1}{2}$ %  
Hay-Budden, Wrought.....9@9 $\frac{1}{2}$ %  
Horseshoe brand, Wrought.....9@9 $\frac{1}{2}$ %  
Trenton..... $\frac{1}{2}$  lb 9@9 $\frac{1}{2}$ %

## Imported—

Peter Wright & Sons..... $\frac{1}{2}$  lb 10 $\frac{1}{2}$ %

## Anvil, Vise and Drill—

Millers Falls Co., \$18.00.....15&10%

## Apple Parers—See Parers,

Apple, &c.

## Aprons, Blacksmiths'—

Hull Bros, Co.....30&10%  
Livingston Nail Co.....33 $\frac{1}{2}$ %

## Augers and Bits—

Com. Double Spur.....75@75&10%  
Boring Mach. Augers.....70&10@75%  
Car Bits, 12-in. twist.....60@60&10%  
Jennings' Pattern.....60&10@60&10%  
Ford's Auger and Car Bits.....40&5%  
Forstner Pat. Auger Bits.....25%  
C. E. Jennings & Co.:  
No. 10 ext. lip. R. Jennings' list.....25%  
No. 30, R. Jennings' list.....40&7 $\frac{1}{2}$ %  
Russell Jennings.....25&10&10%  
L. Hommedieu Car Bits.....15%  
Mayhew's Countersink Bits.....45%  
Millers Falls.....50&10&7 $\frac{1}{2}$ %  
Ohio Tool Co.'s Bailey Auger and Car Bits.....40&10%  
Pugh's Black.....20%  
Pugh's Jennings' Pattern.....20%  
Snell's Auger Bits.....30%  
Snell's Bell Hangers' Bits.....60%  
Snell's Car Bits, 12-in. twist.....60&10%  
Wright's Jennings' Bits (R. Jennings' list).....50%

## Bit Stock Drills—

See Drills, Twist.

## Expansive Bits—

Clark's small, \$18; large, \$26.....50&10%  
Clark's Pattern, No. 1,  $\frac{1}{2}$  doz. \$36; No. 2, \$18.....50&10%  
Ford's, Clark's Pattern.....50&10%  
C. E. Jennings & Co., Steer's Pat.....25%  
Swan's.....60%

## Gimlet Bits—

Common Dble. Cut.....\$3.00@3.25

German Pattern, Nos. 1 to 10, \$4.60; 11 to 13, \$5.75

## Hollow Augers—

Bonney Pat., per doz. \$9.00@10.00  
Ames.....25&10%  
New Patent.....25&10%  
Universal.....20%  
Wood's Universal.....25%

## Ship Augers and Bits—

Ford's.....40%  
C. E. Jennings & Co.:  
L. Hommedieu's.....15%  
Watrous'.....35&5%  
Ohio Tool Co.'s.....40%  
Snell's.....40%

## Awl Hatts—See Hatts, Awl.

## Awls—

Erad Awls:  
Handled.....gro. \$2.75@3.00  
Unhdd, Shldered.....gro. \$3@3.25  
Unhdd, Patent.....gro. \$6@7.00

## Peg Awls—

Unhdd, Patent.....gro. \$1@1.40  
Unhdd, Shldered.....gro. \$1.50@2.00  
Scratch Awls:  
Handled, Com.....gro. \$3.50@4.00  
Handled, Socket.....gro. \$11.50@12.00  
Hurwood.....40%

## Awl and Tool Sets—See

Sets, Awl and Tool.

## Axes—

Single Bit, base weights. (up to 3 $\frac{1}{2}$  lb.).....\$5.50

First Quality.....\$6.00

Second Quality.....\$6.00

NOTE.—Heavier Weights add Extras as per regular schedule.

## Axle Grease—

See Grease, Axle

## Axles—

Concord, Loose Collar.....\$4@5 $\frac{1}{2}$ %  
Concord, Solid Collar.....\$4@5 $\frac{1}{2}$ %  
No. 1 Common, Loose.....\$3 $\frac{1}{2}$ @3 $\frac{1}{2}$ %  
No. 1 $\frac{1}{2}$  Com., New Style.....\$4 $\frac{1}{2}$ @4 $\frac{1}{2}$ %  
No. 2 Solid Collar.....\$4@4 $\frac{1}{2}$ %  
Nos. 7, 8, 11 and 12.....75@75&5%  
Nos. 13 to 14.....70&10@75&5%  
Nos. 15 to 18.....75&10@75&10&5%  
Nos. 19 to 22.....75&10@75&10&5%

## Boxes, Axle—

Common and Concord, not turned.....lb. 4 $\frac{1}{2}$ @5 $\frac{1}{2}$ %

Common and Concord, turned.....lb. 5 $\frac{1}{2}$ @6 $\frac{1}{2}$ %

Half Patent.....lb. 8 $\frac{1}{2}$ @9 $\frac{1}{2}$ %

## Bait—

Hendryx.....30%

B. Bait.....25%

Competitor Bait.....20&5%

## Balances—

Caldwell new list.....50&10@50%

Pullman.....50&10@50%

## Spring—

Spring Balances.....60@60&5%

Chatillon's:  
Light Spg. Balances.....40&10%  
Straight Balances.....40%  
Circular Balances.....50%  
Large Dial.....30%

## Barb Wire—See Wire, Barb.

## Bars—

Steel Crowbars, 10 to 40 lb. per lb., 2 $\frac{1}{2}$ @3 $\frac{1}{2}$ %

## Towel—

No. 10 Ideal, Nickel Plate..... $\frac{1}{2}$  gro. \$5.50

## Beams, Scale—

Scale Beams.....\$4@10@50%

Chatillon's No. 1.....30%

Chatillon's No. 2.....40%

## Beaters, Carpet—

Holt-Lyon Co.:  
No. 12 Wire Coppered  $\frac{1}{2}$  doz. \$9.25;  
Tinned.....\$1.00

No. 11 Wire Coppered  $\frac{1}{2}$  doz. \$1.10;  
Tinned.....\$1.20

No. 10 Wire Galvanized.....\$1.75

Western W. G. Co.:  
No. 1 Electric.....gro. \$7.80

No. 2 Buffalo.....gro. \$9.00

No. 3 Perfection Dust.....gro. \$8.00

## Egg—

Holt-Lyon Co.:  
Holt, No. A, Japanned..... $\frac{1}{2}$  doz. \$1.20

Holt, No. 1, Tinned..... $\frac{1}{2}$  doz. \$1.50

Holt, No. B, Japanned..... $\frac{1}{2}$  doz. \$2.00

Holt, No. 2, Tinned..... $\frac{1}{2}$  doz. \$2.25

Lyon, No. 2, Japanned..... $\frac{1}{2}$  doz. \$1.25

Lyon, No. 3, Japanned..... $\frac{1}{2}$  doz. \$1.50

Taplin Mfg. Co.:  
No. 60 Improved Dover.....\$4.00

No. 75 Improved Dover.....\$4.50

No. 100 Improved Dover.....\$7.00

No. 102 Improved Dover, Tin'd.....\$8.50

No. 150 Improved Dover, Hotel.....\$15.00

No. 152 Imp'd Dover, Hotel, T'd.....\$17.00

No. 200 Imp'd Dover Tumbler.....\$8.50

No. 202 Imp'd Dover Tumbler, T'd.....\$9.50

No. 300 Imp'd Dover Mammoth,  $\frac{1}{2}$  doz.....\$25.00

Western W. G. Co., Buffalo.....\$7.00

Wonder (S. S. & Co.),  $\frac{1}{2}$  gro. net, \$6.00

## Bellows—

Blacksmith, Standard List.....60&10@70&10%

## Blacksmiths'—

Inch. 30 32 34 36 38 40

Each \$3.25 3.50 4.00 4.50 5.00 5.75

Extra Length:

Each \$3.75 4.25 4.75 5.25 6.00 7.00

## Hand—

Inch. 6 7 8 9 10

Doz. \$4.50 5.00 5.50 6.00 6.50

## Molders—

Inch. 9 10 11 12 14

Doz. \$8.00 9.00 10.50 12.50 14.50

## Bells—

Ordinary goods.....75&5@75&10&5%

High grade.....70&10@70&10&5%

Jersey.....75&10%

Texas Star.....50%

## Door—

Abbe's Gong.....45%

Burton Gong.....50%

Home, R. & E. Mfg. Co.'s.....55&10%

Lever and Pull, Sargent's.....60&10&10%

Trip Gong.....50&10@50&10&5%

Yaukee Gong.....55%

## Hand—

Hand Bells, Polished, Brass.....60&5@60&10&5%

White Metal.....60%

Nickel Plated.....50&10@50&10&5%

Swiss.....60@60&7 $\frac{1}{2}$ %

Cone's Globe Hand Bells.....33 $\frac{1}{2}$ @35%

Silver Chime.....33 $\frac{1}{2}$ @35%

## Miscellaneous—

Farm Bells.....lb. 2 $\frac{1}{2}$ @

Steel Alloy Church and School.....50&10&5@60&5%

American Tube & Stamping Co.:  
Gongs.....75%

Table Call Bells.....50&5@10%

## Belt—

Extra Hoy, Short Lap.....60@60&5%

Regular Short Lap.....65&10@70%

Standard.....70&5@70&10%

Light Standard.....70&10@75%

Cut Leather Lacing.....60&10%

Leather Lacing Slides, per sq. ft. 17 $\frac{1}{2}$ @18 $\frac{1}{2}$ %

## Rubber—

Agricultural (Low Grade).....75@75&5%

Common Standard.....70@70&10%

Standard.....65&70%

Extra.....60&5@60&10%

High Grade.....50&5@50&10%

## Bench Stops—

See Stops, Bench

## Benders and Upsetters,

Tire—

Detroit Perfected Tire Bender.....40%

Green River Tire Benders and Upsetters.....20%

Detroit Stoddard's Lightning Tire Upsetters, No. 1, \$4.25; No. 2, \$7.25; No. 3, \$10.50; No. 4, \$16.25; No. 5, \$20.50.

## Bicycle Goods—

John S. Leng's Son's 1902 list:  
Chain.....50%

Parts.....50%

Spokes.....50%

Tubes.....60%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

## Blocks—

Tackle—

Common Wooden.....70&10@75&5%

Hartz St. Tackle Blocks.....50&5&5%

Hollow Steel Blocks, with Ford's Patent Shafts.....50&10%

Lane's Patent Automatic Lock and Junior.....30%

Stowell's Novelty Mal. Iron.....50&10%

Stowell's Self Loading.....60%

See also Machines, Hoisting.

## Boards, Stove—

Zinc, Crystal, &c.....30&19@40&10%

## Boards, Wash—

See Washboards.

## Bobs, Plumb—

Keuffel & Esser Co.....33 $\frac{1}{2}$ %

## Bolts—

Carriage, Machine, &c.—

Common Carriage (cut thread):  
3/4 & 6 and Smaller.....75&2 $\frac{1}{2}$ %

Larger and longer.....70%

Phila. Eagle \$3.00 list May 24, '99

Bolt Ends, list Feb. 14, '95, 70&5%

Machine, 3/4 & 4 and smaller.....75&5%

Machine, larger and longer.....70&7 $\frac{1}{2}$ %

## Door and Shutter—

Cast Iron Barrel, Japanned,  
Round Brass Knob:  
Inch. 3 4 5 6 8

Per doz. \$0.30 .35 .45 .56 .75

Cast Iron Spring Flap, Jap'd:  
Inch. 3 4 5 6 8 10

Per doz. \$1.15 1.40 2.00

Cast Iron Chain, Flat, Japanned:  
Inch. 3 4 5 6 8 10

Per doz. \$0.95 1.25 1.55

Cast Iron Shutter, Japanned,  
Brass Knobs:  
Inch. 6 8 10 12

Per doz. \$0.80 .90 1.20

Wrt Barrel Jap'd.....80@80&10%

Wrt "Bronzed".....50@50&10%

Wrt Spring.....70&10@70&10&10%

Wrt Shutter.....50&5@50&10&5%

Wrt Square Neck.....75@75&10%

## Wrt Square.....65%&10@65%&10&10%

Ives' Patent Door.....60%

## Stove and Plow—

Plow.....70&10@70&10&5%

Stove.....82 $\frac{1}{2}$ @83 $\frac{1}{2}$ %

## Tire—

Common.....72 $\frac{1}{2}$ %

Norway Iron.....80%



**Calipers—See Compasses.****Calks, Toe and Heel—**

Blunt, 1 prong.....	per lb. 1.45
Blunt, 1 prong.....	per lb. 1.45
Gautier, Blunt.....	4.00
Gautier, Sharp.....	4.00
Perkins, Blunt Toe.....	3.65
Perkins, Sharp Toe.....	4.15

**Can Openers—**

See Openers, Can.

**Cans, Milk—**

Illinois Pattern.....	1.35	1.35	2.55 each.
New York Pattern.....	1.50	2.20	2.45 each.
Baltimore Pattern.....	1.50	2.20	2.45 each.
Dubuque.....	1.35	1.60	1.75 each.

**Cans, Oil—**

Buffalo Family Oil Cans:			
3	5	10 gal.	
\$18.00	60.00	129.00	gro., net.

**Caps, Percussion—**

Eley's E. B.....	32	55¢
G. D.....	per M	2.05
F. L.....	per M	4.00
G. E.....	per M	4.00
Musket.....	per M	6.00

**Primers—**

Berdan Primers, 32 per M.	2.05
B. L. Caps (Sturtevant Shells)	2.00
22 per M.....	2.00
All other primers per M.	1.50

**Cartridges—**

<b>Blank Cartridges:</b>	
32 C. F., \$5.50.....	10.65%
38 C. F., \$7.00.....	10.65%
22 cal. Rim, \$1.50.....	10.65%
32 cal. Rim, \$2.75.....	10.65%
B. B. Caps, Con. Ball, Sgcd. \$1.90	
B. B. Caps, Round Ball.....	\$1.19
Central Fire.....	25%
Target and Sporting Rifle.....	15c5
Primed Shells and Bullets.....	15d10
Rim Fire, Sporting.....	50%
Rim Fire, Military.....	15c5%

**Castors—**

Bed.....	70	10	70	10
Plate.....	60	10	60	10
Philadelphia.....	75	10	75	10
Acme Ball Bearing.....	33	10	33	10
Boss.....	70	10	70	10
Boss Anti-Friction.....	70	10	70	10
Gem (Roller Bearing).....	80	10	80	10
Martin's Patent (Phoenix).....	45	10	45	10
Standard Ball Bearing.....	30	10	30	10
Tucker's Patent low list.....	30	10	30	10
Yale (Double Wheel) low list.....	30	10	30	10

**Cattle Leaders—**

See Leaders, Cattle.

**Chain, Coil—**

American Coil, Straight Link:				
3-16	3/4	5-16	3/4	9-16
7-10	5/16	1-1/2	3/8	3-30
3-16	3/4	1-1/2	3/8	3-30
3-16	3/4	2-95	2-95	per 100 lb.
German Coil.....	60	10	60	10

**Halters and Ties—**

Halter Chains.....	60	10	60	10
German Pattern Halter Chains	60	10	60	10
list July 24, '97.....	60	10	60	10
Cow Ties.....	60	10	60	10

**Trace, Wagon, &c.—**

Traces, Western Standard: 100 pr.	
6½-6-3, Str'ght, with ring.....	\$23.50
6½-6-2, Str'ght, with ring.....	\$24.50
6½-8-2, Str'ght, with ring.....	\$28.00
6½-10-2, Str'ght, with ring.....	\$32.00

**Miscellaneous—**

Trace, Wagon and Fancy Chains .....	60c	50c	60c	10c	55c
<b>Miscellaneous—</b>					
Jack Chain, list July 10, '93:					
Iron .....	60c	10c	60c	10c	55c
Brass .....	60c	10c	60c	10c	10c
Safety Chain.....	75c	75c	10c	55c	
Gal. Pump Chain.....	10c	5c	54c		
<b>Covert Mfg. Co.:</b>					
Breast .....	40c	2c			
Halter .....	40c	2c			
Heel .....	40c	2c			
Rein .....	40c	2c			
Stallion .....	40c	2c			
<b>Covert Sad. Works:</b>					
Breast .....	70c				
Halter .....	70c				
Hold Back.....	70c				
Rein .....	70c				

**Chalk—(From Jobbers.)**

Carpenters' Blue.....	gro.	35	38¢
Carpenters' Red.....	gro.	30	33¢
Carpenters' White.....	gro.	25	28¢
See also Crayons.			

**Checks, Door—**

Bardsley's .....	45%
Columbia .....	50&10%
Eclipse .....	60&10%

**Chests, Tool—**

Chests, Tool—	
American Tool Chest Co.:	
Boy's Chests, with Tools.....	55
Youth's Chests, with Tools.....	40
Gentlemen's Chests, with Tools.....	30
Farmers', Carpenters', etc., Chests, with Tools.....	20
Machinists' and Pipe Fitters' Chests, Empty.....	50
Tool Cabinets.....	50
E. Jennings & Co.'s Machinists' Tool Chests.....	33 & 10

**Chisels—****Socket Framing and Firmer**

Standard List.....	70	10	75	10
Buck Bros.....	30			
Charles Buck.....	30			
C. E. Jennings & Co. Socket Firmer				
No. 10.....	60			
C. E. Jennings & Co. Socket Fram-				
ing No. 15.....	60			
Ohio Tool Co.'s.....	70			
Swan's.....	70			
L. & I. J. White.....	30	10	30	10

**Tanged—**

Tanged Firmers.....		40	45	@ 40	& 10%
Buck Bros.....		30			
Charles Buck.....		30			
C. E. Jennings & Co. Nos. 191, 181.....		25			
L. & I. J. White, Tanged.....		25	& 5		

**Cold—**

Cold Chisels, good quality.....	13	15¢
Cold Chisels, fair quality.....	11	12¢
Cold Chisels, ordinary.....	9	10¢

**Chucks—**

Beach Pat. each \$8.00.....	35	65
Pratt's Positive Drive.....	25	
Empire.....	25	
Blacksmiths'.....	25	
Skinner Patent Chucks:		
Independent Lathe Chucks.....	50	
Universal.....	50	
Combination.....	50	
Drill Chucks, New Model.....	30	
Drill Chucks, Standard.....	40	
Drill Chucks, Skinner Pat., 0, 1, 2, 40		
Drill Chucks, Skinner Pat., 3, 4, 5, 6, 8.....	30	
Drill Chucks, Positive Drive.....	30	
Planer Chucks.....	25	
Face Plate Jaws.....	40	
Standard Tool Co.:		
Improved Drill Chuck.....	45	
Union Mfg. Co.:		
Combination.....	50	
Czar Drill.....	35	
Combination Geared Scroll.....	40	
Geared Scroll.....	40	
Independent.....	50	
Independent Steel.....	45	
Union Drill.....	45	
Universal.....	50	
Independent Iron F. Plate Jaws.....	40	
Independent Steel F. Plate Jaws.....	40	
Westcott Patent Chucks:		
Lathe Chucks.....	50	
Little Giant Czar Drill.....	50	
Little Giant Double Grip Drill.....	50	
Little Giant Drill, Improved.....	50	
Omeka Drill.....	50	
Scroll Combination Lathe.....	50	

**Clamps—**

Adjustable, Hammers'.....	20	20	20	20
Cabinet, Sargent's.....	50	10	50	10
Carriage Makers', P. S. & W. Co.....	50			
Carriage Makers', Sargent's.....	60			
Besly, Parallel.....	33	10	33	10
Lineman's, Utica Drop Forge & Tool				
Co. ....	40			
Saw Clamps, see Vices, Saw Filers'.				

**Cleaners, Drain—**

Iwan's Champion, Adjustable.....	55
Iwan's Champion, Stationary.....	45

**Sidewalk—**

Star Socket, All Steel.....	30	10	30	10
Star Shank, All Steel.....	30	10	30	10
W. & C. Shank, All Steel.....	30	10	30	10
7 1/2 in., \$3.00; 8 in., \$3.25.				

**Cleavers, Butchers—**

Foster Bros.....	30%
New Haven Edge Tool Co.'s.....	45%
Fayette R. Plumb.....	33 1/2 @ 33 1/2 & 10%
L. & I. J. White.....	30%

**Clippers—**

Chicago Flexible Shaft Company:			
'98 Chicago Horse.....	\$8.75	}	15%
1902 Chicago Horse.....	\$10.75		
20th Century Horse, each, \$5.00.....	20%		
Lightning Belt.....	\$15.00	}	15%
Chicago Belt.....	\$20.00		
Stewart's Patent Sheep, \$12.75.....	20%		

**Finger Nail Clippers—**

Smith & Hemenway Co.....	30	10	30	10
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**Clips, Axle—**

Eagle, 5-16 and 3/4 in.....	75	10	75	10
Norway, 5-16 and 3/4 in.....	60	10	60	10

**Cloth and Netting, Wire—**

See Wire, &amp;c.

**Cocks, Brass—**

Hardware list:			
Compression, Plain Bibbs,			
Globe, Kerosene, Racking,			
&c., Cocks.....	70	10	75%

**Coffee Mills—**

See Mills, Coffee.

**Collars, Dog—**

Nickel Chain, Walter B. Stevens & Son's list.....	40%
Leather, Walter B. Stevens & Son's list .....	40%

**Combs, Curry—**

Metal Stamping Co.....	40
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**Mane and Tail—**

Covert's Saddlery Works.....	60	10
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**Compasses, Dividers, &c.—**

Ordinary Goods.....	75	50	75	10	%
Bemis & Call Hdw. & Tool Co.:					
Dividers.....				65	%
Calipers, Double.....				65	%
Calipers, Inside or Outside.....				65	%
Calipers, Wing.....				60	%
Compasses.....				50	%

**Conductor Pipe, Galva.—**

L. C. L. to Dealers:			
Territory.		Nested. Not nested.	
A. Eastern.....	75	10	75
B. Eastern.....	75	10	75
Central.....	75	10	70
Southern.....	70	10	70
S. Western.....	70	10	70

Terms, 60 days; 2% cash 10 days. Factory shipments generally delivered.

See also Elave Troughs.

**Coolers, Water—**

Gal, each.....	2	3	4	6	8
Labrador .....	\$1.20	\$1.50	\$1.80	\$2.10	\$2.70
Gal.....	3	4	5	6	8
Iceland, ea.....	\$1.80	\$2.10	\$2.40	\$2.70	\$3.00
Gal.....	2	3	4	6	8
Galv. Lined, ea.....	\$1.85	\$2.00	\$2.25	\$2.50	\$3.00
					25%
Galv. Lined, side handles.....					
Gal.....	2	3	4	6	8
Each.....	\$1.95	\$2.15	\$2.40	\$3.30	\$4.15..25%

**Coopers' Tools—**

See Tools, Coopers.

**Cord— Sash—**

Braided, Drab.....	10	35¢
Braided White, Com. lb.....	21	22 1/2¢
Cable Laid Italian.....		
lb., A, 18¢; B, 16¢		
Common India.....	10	10 1/2¢
Cotton Sash Cord, Twisted.....	11	17¢
Patent Russia.....	10	14¢
Cable Laid Russia.....	10	15¢
India Hemp, Braided.....	10	18¢
India Hemp, Twisted.....	10	13¢
Patent India, Twisted.....	10	13¢
Anniston Cordage Co.: Braided Cotton.		
Old Glory, Nos. 1 to 12.....	10	28¢
Anniston, Nos. 1 to 12.....	10	22¢
Old Colony, Nos. 1 to 12.....	10	22¢
Anniston Drab, Nos. 1 to 12.....	10	28¢
Pearl Braided, cotton, No. 6.....	10	10
22¢; No. 7, 21¢; Nos. 8 to 12, 21¢		
Eddystone Braided, Nos. 7, 8, 9 and 10		
Eddystone Braided Cotton, No. 6.....	10	25¢
Harmony Cable Laid Italian, Nos. 7 to 10.....	10	23¢
Peerless.....		
Cable Laid Italian.....	16	16¢
Cable Laid Russian.....	14	14¢
Cable Laid India.....	12	12¢
Braided India.....	18	18¢
Samson, Nos. 8 to 12:		
Braided, 10 lb. Cotton.....	10	40¢
Braided, Italian Hemp.....	10	40¢
Braided, Linen.....	10	55¢
Braided, White Cotton or Spot.....	10	35¢
Massachusetts, White.....	10	28¢
Drab.....	10	32¢
Phoenix, White, Nos. 8 to 12, 24¢		
No. 7, 24¢; No. 6, 25 1/2¢.		
Silver Lake:		
A quality, Drab.....	40	40¢
A quality, White.....	35	35¢
B quality, White.....	35	35¢
B quality, White.....	35	35¢
Italian Hemp.....	40	40¢
Linen.....	57	57¢

**Wire, Picture—**

List Oct., '00.....	85	10	85	10
Hendryx Standard Wire Picture.....	55	10	55	10

**Cradles—**

Grain.....	40	12 1/2¢
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**Crayons—**

White Round Crayons, gr. 5 1/2¢			
Cases, 100 gr., \$4.00, at factory.			
D. M. Steward Mfg. Co.:			
Jumbo Crayons.....	gr.	\$3.50	Case lots, 20% Case lots, 20%
Metal Workers' Crayons, gr.	\$2.50		
Soapstone Pencils, round, flat			
each square.....	gr. \$1.50		
Rolling Mill Crayons.....	gr. \$2.50		
Railroad Crayons (composition)			
	gr.	\$2.00	
Zelnicke's Lumber:			
Red, Blue, Green.....	gr.	\$6.50	
Black.....	gr.	\$4.00	
See also Chalk.			

**Faucets—**

Cork Lined.....	50¢@50¢10%
Metallic Key, Leather Lined..	60¢10¢70%
Red Cedar.....	40¢10¢70%
Petroleum.....	70¢10¢75%
B. & L. B. Co.: Metal Key.....	60¢10%
Star.....	60¢
West Lock.....	50¢10%
John Sommer's Peerless Tin Key..	40¢
John Sommer's Rose Tin Key.....	50¢
John Sommer's Victor Mtl. Key..	50¢10%
John Sommer's Duplex Metal Key..	60¢
John Sommer's Diamond Lock.....	60¢
John Sommer's I. X. L. Cork Lined..	50¢
John Sommer's Reliable Cork Lined..	50¢10%
Common Sommer's Chicago Cork Lined..	60¢
John Sommer's O. K. Cork Lined..	50¢
John Sommer's No Brand, Cedar.....	50¢
John Sommer's Perfection, Cedar.....	40¢
McKenna, Brass: Burglar Proof, N. P.....	25¢
Improved, 1/4 and 1/2 inch.....	25¢
Self Measuring: Enterprise, 1/2 doz. \$36.00.....	40¢10%
Lane's, 1/2 doz. \$36.00.....	40¢10%
National Measuring, 1/2 doz. \$36.00.....	40¢10%

**Felloe Plates—**

See Plates, Felloe.

**Files— Domestic—**

List revised Nov. 1, 1899.

Best Brands.....	70¢10¢75¢5%
Standard Brands.....	75¢10¢75¢10¢10%
Lower Grade.....	75¢10¢10¢80¢10%

**Imported—**

Stubs' Tapers, Stubs' list, July 24, '97.....	33 1-3¢@40%
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**Fixtures, Fire Door—**

Richards Mfg. Co.: Universal, No. 103.....	\$4.00
Special, No. 104.....	\$4.00
Fusible Links.....	\$0.25
Expansion Bolts.....	\$0.10¢10%

**Grindstone—**

Net Prices: Inch.....	15 17 19 21 24
Per doz. \$2.15 2.85 3.25 3.75 4.50	
P. S. & W. Co.....	\$0.10¢10%
Reading Hardware Co.....	70¢
Sargent's.....	70¢
Stowell's Giant Grindstone Hanger.....	40¢ doz. \$6.00
Stowell's Grindstone Fixtures, Extra Heavy.....	50¢10¢10%
Stowell's Grindstone Fixtures, Light.....	60¢10%

**Fodder Squeezers—**

See Compressors.

**Forks—**

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Iowa Dig-Ezy Potato.....	60¢10%
Victor, Hay.....	60¢15¢24¢
Victor, Manure.....	66¢
Victor, Header.....	65¢
Champion, Hay.....	66¢
Champion, Header.....	65¢
Champion, Manure.....	60¢15¢24¢
Columbia, Hay.....	60¢20¢
Columbia, Manure.....	70¢
Columbia, Spading.....	70¢12¢
Hawkeye Wood Barley.....	60¢10%
W. & C. Potato Digger.....	60¢10%
Acme Hay.....	60¢20¢
Acme Manure, 4 tine.....	60¢10¢5%
Dakota Header.....	60¢20¢
Jackson Steel Barley.....	60¢20¢
Kansas Header.....	60¢20¢
W. & C. Favorite Wood Barley.....	40%
Plated.—See Spoons.	

**Frames— Saw—**

White, S'g't Bar, per doz. 75¢@80¢	
Red, S'g't Bar, per doz. \$1.00@1.25	
Red, Dbl. Brace, per doz. \$1.40@1.50	

**Freezers, Ice Cream—**

Qt. ....	1 2 3 4 6
Each .....	\$1.25 \$1.60 \$1.90 \$2.20 \$2.80

**Fruit and Jelly Presses—**

See Presses, Fruit and Jelly.

**Fry Pans—See Pans, Fry.****Fuse— Per 1000 Feet.**

Hemp .....	\$2.75
Cotton.....	3.20
Waterproof Sgl. Taped.....	3.65
Waterproof Dbl. Taped.....	4.40
Waterproof Tpl. Taped.....	5.15

**Gates, Molasses and Oil—**

Stebbins' Pattern.....	80¢10¢80¢10¢5%
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**Gauges—**

Marking, Mortise, &c.....	50¢10¢50¢10¢10¢5%
Chapin-Stephens Co.: Marking, Mortise, &c.....	50¢10¢50¢10¢10%
Scholl's Patent.....	50¢10¢50¢10¢10%
Door Hangers.....	50¢50¢10%
Stanley R. & L. Co.'s Butt and Rabbit Gauge.....	20¢20¢10¢10%
Wire, Brown & Sharpe's.....	25¢
Wire, Morse.....	25¢
Wire, P. S. & W. Co.....	30¢10%

**Gimlets— Single Cut—**

Nail, Metal, No. 1, \$2.00; 2, \$2.30	
Spike, Metal, No. 1, \$4.00; 2, \$4.30	
Nail, Wood Handled, No. 1, \$2.30; 2, \$2.60	
Spike, Wood Handled, No. 1, \$4.30; 2, \$4.60	

**Glass, American Window**

See Trade Report.

**Glasses, Level—**

Chapin-Stephens Co.....	60¢60¢10¢10%
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**Glue, Liquid Fish—**

Bottles or Cans, with Brush.....	25¢50%
Cans (1/2 pts., pts., qts., 1/2 gal., gal.) .....	25¢48%
International Glue Co. (Martin's).....	40¢10%

**Grease, Axle—**

Common Grade... gro. \$4.50@5.50	
Dixon's Everlasting... 10-lb pails, ea. 85¢	
Dixon's Everlasting in boxes, 1/2 doz. 1 lb. \$1.20; 2 lb. \$2.00	

**Grips, Nipple—**

Perfect Nipple Grips.....	40¢10¢2%
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**Griddles, Soapstone—**

Pike Mfg. Co.....	33 1/4¢@33 1/2¢10%
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**Grindstones—**

Bicycle Emery Grinder.....	\$6.50
Bicycle Grindstones, each.....	\$2.50@3.00
Pike Mfg. Co.: Improved Family Grindstones, per inch, 1/2 doz. \$2.00	
Pike Mower and Tool Grinder, each.....	\$6.00
Velox Ball Bearing, Mounted, Angle Iron Frames, each.....	\$3.25

**Halters and Ties—**

Covert Mfg. Co.: Web.....	45¢
Sisal Rope.....	50¢5%
Sisal Rope.....	35¢5%
Cotton Rope.....	45¢5%
Hemp Rope.....	45¢5%
Covert's Saddlery Works: Web and Leather Halters.....	70¢
Jute and Manila Rope Halters.....	70¢
Sisal Rope Halters.....	60¢20¢
Jute, Manila and Cotton Rope Ties.....	70¢
Sisal Rope Ties.....	60¢10%

**Hammers—****Handled Hammers—**

Heller's Machinists'.....	40¢10¢40¢10%
Heller's Farriers.....	40¢10¢40¢10%
Magnetic Tack, Nos. 1, 2, 3, \$1.25, \$1.50, \$1.75.....	40¢10¢10%
Pock, Stow & Wilcox.....	40¢10¢5%
Fayette R. Plumb: Plumb, A. E. Nail.....	33 1/4¢1/4¢@33 1/2¢10¢1/4%
Engineers' and R. S. Hand.....	40¢10%
Machinists' Hammers.....	50¢50¢50¢10¢5%
Riveting and Timmers.....	40¢2/4¢@40¢10¢2/4%
Sargent's C. S. New List.....	40%

**Heavy Hammers and Sledges—**

Under 3 lb., per lb. 50¢.....	80¢10¢10¢85%
3 to 5 lb., per lb. 40¢.....	80¢10¢10¢85%
Over 5 lb., per lb. 30¢.....	85¢85¢10%
Wilkinson's Smiths'.....	1 lb. 9¢@10¢

**Handles—**

Agricultural Tool Handles Axe, Pick, &c.....	60¢5¢@60¢10¢5%
Hoe, Rake, &c.....	45¢50¢5%
Fork, Shovel, Spade, &c.: Long Handles.....	45¢50¢5%
D Handles.....	40%

**Cross-Cut Saw Handles—**

Atkins'.....	40¢5%
Champion.....	45¢45¢10%
Disston's.....	50%

**Mechanics' Tool Handles—**

Auger, assorted.....	gro. \$2.50@2.85
Brad Axl.....	gro. \$1.65@1.85
Chisel Handles: Apple Tanged Firmer, gro. assorted.....	\$2.40@2.65
Hickory Tanged Firmer, gro. assorted.....	\$2.15@2.40
Apple Socket Firmer, gro. assorted.....	\$1.75@1.95
Hickory Socket Firmer, gro. assorted.....	\$1.45@1.60
Hickory Socket Framing, gro. assorted.....	\$1.60@1.75
File, assorted.....	gro. \$1.30@1.40
Hammer, Hatchet, Axe, &c.....	60¢10¢60¢10¢10%
Hand Saw, Varnished, doz. 80¢85¢; Not Varnished.....	65¢75¢
Plane Handles: Jack, doz. 30¢; Jack, Bolted 75¢	
Fore, doz. 45¢; Fore, Bolted 90¢	
Chapin-Stephens Co.: Carving Tool.....	30¢40¢10%
Chisel.....	65¢65¢10%
File and Awl.....	65¢65¢10%
Saw and Plane.....	40¢40¢10%
Screw Driver.....	40¢40¢10%
Millers Falls Adj. and Ratchet Auger Handles.....	15¢10%
Nicholson Simplicity File Handle.....	1/2 gro. \$0.85@1.50

**Hangers—**

NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.	
Barn Door, New Pattern, Round Groove, Regular: Inch.....	3 4 5 6 8
Single Doz. \$0.90 1.25 1.60 1.95 2.50	

**Barn Door, New England Pat-**

tern, Check Back, Regular:

Inch.....	3 4 5 6
Single Doz.....	\$1.30 1.85 2.50 3.00
Atkins Mfg. Co.: Reliable, No. 1.....	per doz. \$8.00
Reliable, No. 2.....	per doz. \$9.50
Chicago Spring Butt Co.: Friction.....	25¢
Oscillating.....	25¢
Big Twin.....	25¢
Chisholm & Moore Mfg. Co.: Baggage Car Door.....	50¢
Elevator.....	30¢
Railroad.....	50¢
Cronk & Carrier Mfg. Co.: Loser Axle.....	60¢10¢5%
Roller Bearing.....	70¢5%
Griffin Mfg. Co.: Solid Axle, No. 10, \$12.00.....	70%
Roller Bearing, No. 11, \$15.00.....	70%
Roller Bearing, Ex. H., No. 12, \$18.00.....	70%
Hinged Hangers, \$16.00.....	60¢10%
Lane Bros. Co.: Parlor, Ball Bearing.....	\$4.00
Parlor, Standard.....	\$3.15
Parlor, No. 105.....	\$3.15
Parlor, New Model.....	\$2.80
Parlor, New Champion.....	\$2.25
Barn Door, Standard.....	60¢10¢2/4%
Hinged.....	net \$6.40
Covered.....	60¢10%
Special.....	70¢5%
Lawrence Bros.: Advance.....	60¢10%
Cleveland.....	70¢5%
Clipper, No. 75.....	60%
Crown.....	60%
Easy Parlor Door, Dbl. Sets, \$2.50; Single Sets, \$1.25.....	60¢5%
Giant.....	70¢5%
Hummer.....	70¢5%
New York.....	60¢10%
Peerless.....	70¢5%
Sterling.....	60¢10%
McKinney Mfg. Co.: No. 1, Special, \$15.....	60¢10%
No. 2, Standard, \$18.....	60¢10%
Hinged Hangers, \$16.....	60¢10%
Meyers' Stayon Hangers.....	60%
Richards Mfg. Co.: Pioneer Wood Track No. 3, \$2.15	
Ball B'r'g St'l Track No. 10, \$2.40	
Roller B'r'g St'l Track No. 12, \$2.30	
Ball B'r'g St'l Track No. 13, \$2.40	
Roller B'r'g St'l Track No. 14, \$2.30	
Hero, Adj. Track No. 19.....	50%
Adjustable Track Tandem Trolley Track No. 16.....	50%
Steel Track No. 8.....	\$2.40
Auto Adj. Track No. 22.....	40¢10%
Trolley B. D. No. 17.....	\$1.40
Trolley B. D. No. 120.....	\$2.35
Trolley F. D. No. 121.....	\$2.45
Trolley F. D. No. 150.....	\$2.60
Standard Underwriter's F. D. No. 101.....	\$2.25
Tandem No. 44.....	70¢5%
Trolley F. D. No. 151.....	\$3.00
Palace, Adjustable Track No. 122.....	40¢10%
Boy No. 122.....	40¢10%
Ires' Wood Track No. 1.....	\$2.15
Trolley B. D. No. 20.....	\$1.35
Trolley B. D. No. 24.....	\$1.45
Trolley B. D. No. 28.....	\$1.50
Trolley B. D. No. 28.....	\$1.50
Roller Bearings Nos. 30, 40, 41, 43, 44.....	70¢5%
Anti-friction No. 42.....	60¢10%
Hinged Tandem No. 48.....	60%
Folding Door B. B. Swivel No. 135.....	30%
Safety Door Hanger Co.: Storm King Safety.....	60%
U. S. Standard Hinge.....	60%
Stowell Mfg. & Foundry Co.: Acme Parlor Ball Bearing.....	40%
Ajax Hinge Door.....	50¢10¢5%
Atlas.....	60%
Baggage Car Door.....	50%
Chisholm Anti-Friction.....	50¢10%
Elevator.....	50%
Express.....	60%
Freight Car Door.....	60%
Interstate.....	60¢10%
Lundy Parlor Door.....	50¢10%
Magis.....	60%
Matchless.....	70¢5%
Nansen.....	70¢5%
Parlor Door.....	50¢10%
Railroad.....	50¢10%
Rex Hinge Door.....	60%
Street Car Door.....	60%
Steel, Nos. 300, 400, 500.....	50¢10%
Underwriters' Fire Door.....	40%
Wild West Warehouse Door.....	50%
Zenith for Wood Track.....	50¢10%
A. Sweet Iron Works: Check Back Checking.....	70%
Climax Anti-Friction.....	50¢10%
Eagle.....	70%
Hylo Hinge.....	60%
New Perfection.....	60%
Pilot.....	60%
Rider Wooster.....	65%
Western Pattern.....	70%
Taylor & Hoggis P'y Co.'s Kidder's Roller Bearing.....	50¢15¢10¢5%
Wilcox Mfg. Co.: Bike Roller Bearing.....	60¢10%
C. J. Roller Bearing.....	60¢10%
Cycle Ball Bearing.....	50%
Dwarf Ball Bearing.....	40%
Ives Wood Track.....	60¢10%
Le Roy Roller Bearing.....	60¢10¢5%
New Le Roy Roller Bearing.....	60%
O. K. Roller Bearing.....	60¢10¢5%
Prindle Wood Track.....	60%
Richards' Wood Track.....	60%
Richards' Steel Track.....	50¢10%
Spencer Roller Bearing.....	60¢10%
Tandem, Nos. 1 and 2.....	60%
Underwriters' Roller Bearing.....	40%
Velvet.....	50%
Wilcox Auditorium Ball B'r'g.....	25%
Spencer Barn Trolley No. 123.....	40%
Wilcox Elev. Door No. 112.....	112%
and 122 1/2.....	50%
Wilcox Elev. Door No. 132.....	40%
Wilcox Fire Trolley, Roller Bearing.....	30%
Wilcox Le Roy Noiseless Ball Bearing.....	40%
Wilcox New Century.....	50¢10¢10%
Wilcox O. K. Steel Track.....	50%
Wilcox O. K. Trolley.....	50%
Wilcox Trolley Ball Bearing.....	40%
Wilcox Wideman Narrow Gauge Ball Bearing.....	60%
For Track, see Rail.	

**Hangers— Garment—**

Pullman Trouser, No. 1.....	1/2 gro. \$9.00
Pullman Trouser, No. 4.....	1/2 gro. \$2.00
Victor Folding.....	gro. \$9.00
Western, W. G. Co.....	70¢10%

**Gate—**

Myers' Patent Gate Hangers, 1/2 doz. net.....	\$4.50
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**Hasps—**

McKinney's Perfect Hasp, 1/2 doz.....	50%
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**Hatchets—**

Regular list, first quality.....	40¢75%
Second quality \$1.00 per doz. less than first quality.	

**Heaters, Carriage—**

Clark, No. 5, \$1.75; No. 5B, \$2.00; No. 3, \$2.25; No. 3D, \$2.50; No. 7D, \$3.00; No. 3E, \$3.25; No. 1, \$3.50.....	15%
Clark Coal, 1/2 doz. \$0.75.....	10%

**Hinges—**

Blind and Shutter Hinges— Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.) No.....	1 3 5
Doz. pair.....	\$0.75 1.35 2.70

**Mortise Shutter—**

(L. & P. O. S., Dixie, &c.) No.....	1 1 1/2 2 2 1/2
Doz. pair.....	\$0.70 .65 .60 .55

**Mortise Reversible Shutter (Buffalo, &c.)**

No.....	1 1 1/2
Doz. pair.....	\$0.70 .65 .60

**North's Automatic Blind Fixtures**

No. 2, for Wood, \$9.00; No. 3, for Brick, \$1
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### Wrought Iron Hinges—

Strap and T Hinges, &c., list  
December 20, 1904:

Light Strap Hinges.....70%	Extra 100/1045
Heavy Strap Hinges.....75%	
Light T Hinges.....65%	
Heavy T Hinges.....60%	
Extra H'y T H'g's.....70&10%	
Hinge Hasps.....50%	
Cor. Heavy Strap.....75&10%	
Cor. Ex. Heavy T.....70&10%	
Screw Hook 6 to 12 in. 1b. 3 1/2	
and Strap.....1 1/2 to 20 in. 1b. 3 1/2	
22 to 36 in. 1b. 3	
Screw Hook and Eye:	
1/2 to 1 inch.....1b. 6	
1 inch.....1b. 7	
1 1/2 inch.....1b. 9	

### Hitchers, Stall—

Covert Mfg. Co., Stall Hitchers.....35%

### Hods— Coal—

Inch.....15 16 17 18	Per doz.
Galt, Open.....\$2.50 2.75 3.00 3.25	
Jap. Open.....\$1.90 2.10 2.25 2.55	
Galt, Funnel.....\$3.00 3.30 3.60 3.90	
Jap. Funnel.....\$2.45 2.65 2.85 3.30	

### Masons, Etc.—

Cleveland Wire Spring Co.:  
Steel Mortar.....each \$1.45  
Steel Brick.....each \$1.10

### Hoes— Eye—

Scovill and Oval Pattern.....  
60&100/60&10&10%  
Grub, list Feb. 23, 1899.....  
70&100/75&10%  
D. & H. Scovill.....35%

### Handled—

NOTE.—Manufacturers are  
selling from the list of September  
1, 1904, but many jobbers are still  
using list of August 1, 1899, or  
selling at net prices.

Ft. Madison Cotten Hoe.....70&10&10%  
Ft. Madison Crescent Cultivator Hoe.....  
70&10%  
Ft. Madison Mattock Hoe:  
Regular Weight.....doz. 66%  
Junior Size.....doz. \$4.00  
Ft. Madison Sprouting Hoe.....doz. \$4.00  
Ft. Madison Dixie Tobacco Hoe.....  
75&10&7%  
Kretzinger's Cut Easy.....70&10%  
Warren Hoe.....45&10%  
W. & C. Ivanhoe.....75&10%  
R. B. 6 in. Cultivator Hoe.....45%  
R. B. 6 in. Hoe.....45%  
W. & C. L'ning Shuffler Hoe.....doz. \$4.85

### Hoisting Apparatus—

See Machines, Hoisting.

### Holders— Bit—

Angular, 1/2 doz. \$24.00.....45&10%  
Door—  
Empire.....50%  
Bardsley's.....45%

### File and Tool—

Nicholson File Holders and File  
Handles.....33&40%

### Hooks—Cast Iron—

Bird Cage, Reading.....60%  
Bird Cage, Sargent's List.....60&10%  
Ceiling, Sargent's List.....50&10&10%  
Clothes Line, Reading List.....60&10%  
Clothes Line, Sargent's List.....50&10&10%  
Coat and Hat, Sargent's List.....50&10%  
Clothes Line, Stowell's.....70%  
Coat and Hat, Reading.....45&20%  
Coat and Hat, Stowell's.....70%  
Coat and Hat, Wrightsville.....70%  
Harness, Reading List.....65%  
Harness, Stowell's.....60%  
School House, Stowell's.....70%

### Wire—

Belt.....80&100%  
Wire C. & H. Hooks.....  
75&100/75&10&5%  
Atlas, Coat and Hat:  
Single Cases.....75%  
10 Case Lots.....75&10%  
Columbian Hdw. Co., Gem.....60&10%  
Parker Wire Goods Co., King.....75&10%  
Van Wagoner, Coat and Hat.....70%  
Western W. G. Co., Molding.....75%  
Wire Goods Co.:  
Acme.....60&10%  
Chief.....70%  
Crown.....70&10%  
CRP.....65%  
V Brace.....70&10%  
Clear Harness.....50&10%

### Wrought Iron—

Bor. 6 in., per doz., \$1.00; 8 in.,  
\$1.25; 10 in., \$2.50.  
Cotton.....doz. \$1.05@1.25  
Wrought Staples, Hooks, &c.....  
See Wrought Goods.

### Miscellaneous—

Hooks, Bench, See Staps, Bench.  
Rush, Light, doz. \$4.75; Medium,  
\$5.35; Heavy, \$6.25  
Grass.....Nos. 1 2 3 4  
Rest.....\$1.50 1.75 2.00  
Common.....\$1.30 1.30 1.40 1.60  
Whiffletree.....1b. 5%  
Hooks and Eyes:  
Brass.....60&10&10/70%  
Malleable Iron.....70&10&75%  
Covert Mfg. Co., Gate and Scuttle  
Hooks.....35%  
Covert Saddlery Works' Self Locking  
Gate and Door Hook.....60%  
Ft. Madison Cut-Easy 1/2 doz. \$3.25 net  
Bench Hooks—See Bench Staps.  
Corn Hooks—See Knives, Corn.

### Horse Nails—

See Nails, Horse.

### Horseshoes—

See Shoes, Horse.

### Hose, Rubber—

Garden Hose, 3/4-inch:  
Competition.....ft. 5 @ 6¢  
3-ply Standard.....ft. 8 @ 9¢  
3-ply Standard.....ft. 10 @ 11¢  
3-ply extra.....ft. 11 @ 13¢  
3-ply extra.....ft. 14 @ 16¢  
Cotton Garden, 3/4-in., coupled:  
Low Grade.....ft. 8 @ 9¢  
Fair Quality.....ft. 10 @ 11¢

### Irons— Sad—

From 1 to 10.....lb. 2 1/4 @ 3¢  
B. B. Sad Irons.....lb. 3 1/4 @ 3 1/2¢  
Chinese Laundry.....lb. 3 1/4 @ 3 1/2¢  
Chinese Sad.....lb. 4 @ 4 1/4¢  
Mrs. Potts', cents per act:  
Nos.....50 55 60 65  
Jap'd Tops.....62 59 72 69  
Tin'd Tops.....65 62 75 72  
New England Pressing.....lb. 3 1/4 @ 4¢

### Pinking—

Pinking Irons.....doz. 50@60¢

### Soldering—

Soldering Coppers, 2 1/2 & 3.20 @ 2 1/2¢  
1 1/2 & 2.....22 @ 2 1/2¢

### Jack, Wagon—

Covert Mfg. Co.:  
Auto Screw.....30&5%  
Steel.....45&10%  
Covert's Saddlery Works:  
Daisy.....60&10%  
Victor.....60%  
Lockport.....50%  
Lane's Steel.....30&10&5%  
Richards' Tiger Steel, No. 130.....40%

### Kettles—

Brass, Spun, Plain.....20@25%  
Enameled and Cast Iron—See Ware,  
Hollow.

### Knives—

Butcher, Kitchen, &c.—  
Foster Bros' Butcher, &c.....30%  
Smith & Hemenway Co.....40&10%  
Wilkinson Shear & Cutlery Co.....50%

### Corn—

Withington Acme, 1/2 doz. \$2.65;  
Dent, \$2.75; Adj. Serrated, \$2.20;  
Serrated, \$2.10; Yankee No. 1, \$1.50;  
Yankee No. 2, \$1.15.

### Drawing—

Standard List.....70&100/75&10%  
C. E. Jennings & Co., Nos. 45, 46, 60,  
Jennings & Griffin, Nos. 41, 42.....60%  
Ohio Tool Co.'s.....70%  
Swan's.....70&10&2%  
Watson.....16%  
L. & I. J. White.....20&50/25%

### Hay and Straw—

Serrated Edge, per doz. \$5.25 @ 5.50  
Ivan's Sickle Edge.....doz. \$9.50  
Ivan's Serrated.....doz. \$10.00

### Mincing—

Buffalo.....1/2 gro. \$13.00

### Miscellaneous—

Farrier's.....doz. \$3.00 @ 3.25  
Wostenholm's.....doz. \$3.00 @ 3.25

### Knobs—

Base, 2 1/2-inch, Birch, or Maple,  
Rubber tip.....gro. \$1.15 @ 1.20  
Carriage, Jap., all sizes.....  
gro. 40 @ 45¢  
Door, Mineral.....doz. 65 @ 70¢  
Door, Por. Jap'd.....doz. 70 @ 75¢  
Door, Por. Nickel, doz. \$2.05 @ 2.15  
Bardsley's Wood Door, Shutters, &c. 15%  
Picture, Sargent's.....60&10&10%

### Lacing, Leather—

See Betting, Leather—

### Ladders, Store, &c.—

Lane's Store.....25%  
Myers' Noiseless Store Ladders.....50%  
Richards Mfg. Co.:  
Improved Noiseless, No. 112.....40%  
Climax Shelf, No. 113.....60%  
Trolley, No. 109.....40%

### Ladles, Melting—

L. & G. Mfg. Co. (low list).....25%  
P. S. & W.....30%  
Reading.....60%  
Sargent's.....50&10%

### Lanterns— Tubular—

Regular Tubular, No. 0.....doz. \$1.35 @ 1.75  
Lift Tubular, No. 0, doz. \$1.75 @ 5.25  
Hinge Tubular, No. 0.....doz. \$1.75 @ 5.25

### Other Styles.....40&100/40&10&5%

### Bull's Eye Police—

No. 1, 2 1/4-inch.....\$2.50 @ 2.75  
No. 2, 3-inch.....\$2.75 @ 3.00

### Lasts and Stands, Shoe—

Stowell's Atlas, Malleable Iron.....50%  
Stowell's Badger, Cast Iron.....50%

### Latches— Thumb—

Roggin's Latches, with screw.....doz. 35 @ 40¢

### Door—

Richards' Bull Dog, Heavy No. 125, 40%  
Richards' Trump, No. 127.....50%

### Leaders, Cattle—

Small.....doz. 50¢; large, 60¢  
Covert Mfg. Co.....35%

### Lifters, Transom—

R. & E.....33&4%

### Lines—

Wire Clothes, Nos. 18 19 20  
100 feet.....\$2.20 2.00 1.65  
75 feet.....\$1.80 1.70 1.30  
Samson Cordage Works:  
Solid Braided Chalk, Nos. 0 to 3, 10%  
Silver Lake Braided Chalk, No. 0,  
\$6.00; No. 1, \$6.50; No. 2, \$7.00; No. 3,  
\$7.50.  
Mason's Lines, Shade Cord, &c.:  
White Cotton, No. 3 1/2, \$1.50; No. 4,  
\$2.00; No. 5, \$2.50; Colors, No. 3 1/2,  
\$1.75; No. 4, \$2.25; No. 4 1/2, \$2.75;  
Linen, No. 3 1/2, \$2.50; No. 4, \$3.50;  
No. 4 1/2, \$4.50.  
Tent and Awning Lines, No. 5,  
White Cotton, \$7.50; Drab Cotton,  
\$8.50.  
Clothes Lines, White Cotton, 50 ft.,  
\$2.75; 60 ft., \$3.25; 70 ft., \$3.75; 75  
ft., \$4.00; 80 ft., \$4.25; 90 ft., \$4.75;  
100 ft., \$5.25.  
Anniston, Waterproof Clothes, 50 ft.,  
1/2 gro. \$24.00; Gilt Edge, \$22.00; Air  
Line, \$22.00; Acme, \$17.00; Alabama,  
\$15.00; Empire, \$14.00; Advance,  
\$13.50; Oriole, \$20.00; Albemarle,  
\$13.50; Eclipse, \$12.50; Chicago,  
\$11.00; Standard, \$10.00; Columbia,  
\$8.50; Allston, \$12.50; Calhoun, \$11.00.

### Locks— Cabinet—

Cabinet Locks.....33 1/2 @ 33 1/2 & 7 1/2 %  
Door Locks, Latches, &c.—  
NOTE.—Net prices are very often made  
on these goods.

Reading Hardware Co.....45&20%  
R. & E. Mfg. Co.....40&10%  
Sargent & Co.....40&10%  
Stowell's Steel Door Latches.....50%

### Elevator—

Stowell's.....50%

### Padlocks—

Wrought Iron.....75&10&50/80&5%  
R. & E. Mfg. Co. Wrought Steel and  
Brass.....75&75&10%

### Sash, &c.—

Ives' Patent:  
Bronze and Brass.....62%  
Crescent.....50&10%  
Iron.....62%  
Window Ventilating.....60%  
Robison Patent Ventilating Sash  
Lock.....40%  
Wrought Bronze and Brass.....55%  
Wrought Steel.....55%  
Pulman Patent Ventilating Lock.....25%  
Reading.....60%

### Machines—Boring—

Com. Up'r't, without Augers.....\$2.00  
Com. Ang'l'r, without Augers.....\$2.25

R. & E. Mfg. Co.: Upright, Angular,  
Improved No. 3, \$4.25 No. 1, \$5.00  
Improved No. 4, 3.75 No. 2, 3.38  
Improved No. 5, 2.75  
Jennings' Nos. 1 and 4.....35&5%  
Snell's, Rice's Pat. 2.50 2.75

### Corking—

Reisinger Inevincible Hand Power.....  
1/2 doz. \$18.00

### Fence—

Williams' Fence Machines.....each \$5.50

### Hoisting—

Moore's Anti-Friction Differential  
Pulley Block.....30%  
Moore's Hand Hoist, with Lock  
Brake.....20%

### Ice Cutting—

Chandler's.....12%  
Washing—

Boss Washing Machine Co.: Per doz.  
Champion Rotary Banner No. 1, \$54.00  
Standard Champion No. 1.....\$48.00  
Standard Perfection.....\$25.00  
Cinti Squire Western.....\$20.00  
Uneda American, Round.....\$29.00

### Mallets—

Hickory.....45&50/50%  
Lignumvita.....45&50/50%  
Tinner's Hickory and Apple-  
wood.....doz. 45&50/50%

### Mangers, Stable—

Swett Iron Works.....50%

### Mashers, Vegetable—

Western, W. G. Co., Potato.....60&10%

### Mats, Door—

Elastic Steel (W. G. Co.).....10%

### Mattocks—

See Picks and Mattocks.

### Milk Cans—

See Cans, Milk.

### Mills, Coffee, &c.—

Enterprise Mfg. Co.....25@30%  
National list Jan. 1, 1902.....30%  
Parker's Columbia & Victoria, 50&10@60%  
Parker's Box and Side.....50&10@60%  
Swift, Lane Bros. Co.....30%

### Mowers, Lawn—

NOTE.—Net prices are generally quoted  
Cheap.....all sizes, \$1.75 @ 2.00  
Good.....all sizes, \$2.25 @ 2.50

10 12 14 16 in.  
High Grade.....4.25 4.50 4.75 5.00  
Continental.....60&5%  
Great American.....70%  
Great American Ball B'r'g, new list.....70%  
Quaker City.....60&5%  
Pennsylvania, Jr. Ball Bearing.....60%  
Pennsylvania Golf.....50%  
Pennsylvania Horse.....33&45%  
Pennsylvania Pony.....40&5%  
Philadelphia.....70&5%  
Style M. S. C. K. T.....70&5%  
Style A, all Steel.....60&5%  
Style E, High Wheel.....70&10&5%  
Drexel and Gold Coin, special list.....50%

### Nails—

Wire Nails and Brads, Papered,  
List July 20, 1899.....85&100/90%  
Cut and Wire. See Trade Report.  
Hungarian, Finishing, Upholster-  
ers' &c. See Tacks.

### Horse—

Nos. 0 1 2 3 4 5 6 7 8 9 10  
Anchor.....23 21 20 19 18.....40&5%  
Chaplain.....28 26 25 24 23.....50%  
Coleman.....13 12 12 11 11.....net  
New Haven.....23 21 20 19 18.....40&5%  
Putnam.....23 21 20 19 18.....33&4%  
New Putnam, 19 18 17 16 16.....10&10%  
Western.....19 18 17 16 16.....10&10%  
Jobbers' Special Brands, 1/2 lb 8 1/2¢  
per lb. 8 1/2 @ 10¢

### Picture—

1 1/2 2 2 1/2 3 3 1/2 in.  
Brass H'd's.....55 50 70.....gro  
Por. Head.....1.10 1.10 1.10.....gro

### Nippers—

See Pliers and Nippers.

### Nuts—

Off list.  
Mfrs. or U. S. Standard.

Square, plain.....\$1.90  
Hexagon, plain.....\$5.40  
Square, C. T. & R.....\$5.10  
Hexagon, C. T. & R.....\$5.80  
Hot Pressed:  
Mfrs. U. S. or Nar. Gauge Stan'd.  
Square, Blank.....\$5.40  
Hexagon, Blank.....\$5.80  
Square, Tapped.....\$5.40  
Hexagon, Tapped.....\$5.80

### Oakum—

Best or Government.....lb. 6 1/2¢  
Navy.....lb. 5¢  
U. S. Navy.....lb. 6¢  
Plumbers' Spun Oakum.....2 1/2¢  
In carload lots 1/4¢ lb. off, f.o.b.  
New York.

### Oil Tanks—See Tanks, Oil.

### Oilers—

Brass and Copper.....50&10%  
Tin or Steel.....65&10%  
Zinc.....65&10%  
Chase or Paragon:  
Brass and Copper.....45&100/50%  
Tin or Steel.....65&10%  
Zinc.....65&10%  
Malleable, Hammers' Imp'd, No. 1,  
\$3.60; No. 2, \$1; No. 3, \$4.40, 1/2 doz. 20%  
Malleable, Hammers' Old Pattern,  
same list.....50&10%  
American Tube & Stamping Co.:  
Spring Bottom Cans.....70&70&10%  
Railroad Oilers, &c.....60&60&10%

### Openers— Can—

Sprague, Iron Handle.....Per doz., 20@35¢  
Sprague, Wood Handle.....35@40¢  
Sardine Scissors.....doz. \$1.75 @ 3.00  
National.....doz. \$5.00  
Stowell's Sprague.....doz. 35 @ 45¢

### Egg—

Nickel Plate.....1/2 doz. \$2.00  
Silver Plate.....1/2 doz. \$4.00

### Packing—

Asbestos Packing, Wick and  
Rope.....lb. 14 @ 16¢

### Rubber—

(Fair quality goods.)

Sheet, C. I.....80 @ 10¢  
Sheet, C. O. S.....90 @ 13¢  
Sheet, C. B. S.....100 @ 14¢  
Sheet, Pure Gum.....50 @ 65¢  
Sheet, Red.....40 @ 50¢  
Jenkins' '86, 1/2 lb 80¢.....25 @ 25&5%

### Miscellaneous—

American Packing.....lb. 70 @ 10¢  
Cotton Packing.....lb. 16 @ 25¢  
Italian Packing.....lb. 90 @ 12 1/2¢  
Jute.....lb. 40 @ 1 1/2¢  
Russia Packing.....lb. 80 @ 11¢

### Pails, Creamery—

S. S. & Co., with gauges—No. 1,  
\$6.25; No. 2, \$6.50 @ doz.

### Pails, Water, Well, &c.—

See Buckets.

### Pans— Dripping—

Standard List.....60&10

**Tarred Paper—**

1 ply (roll 300 sq. ft.), ton	\$32.50@35.50
2 ply, roll 108 sq. ft.	55@60¢
3 ply, roll 108 sq. ft.	75@85¢
Slater's Felt (roll 500 sq. ft.)	75¢
R. R. M. Stone Surfaced Roofing (roll 110 sq. ft.)	\$2.75

**Sand and Emery—**

Flint Paper and Cloth	60@10¢
Garnet Paper and Cloth	25¢
Emery Paper and Cloth	50¢@10¢

**Parers—Apple—**

Advance	doz. \$4.00
Baldwin	doz. \$4.00
Bonanza Improved	each \$6.50
Daisy	doz. \$4.00
Dandy	each \$7.50
Eureka Improved	each \$20.00
Family Bay State	doz. \$15.00
Improved Bay State	doz. \$36.00
Little Star	doz. \$5.00
New Lightning	doz. \$7.00
Reading 72	doz. \$3.25
Reading 75	doz. \$6.25
Rocking Table	doz. \$6.20
Turn Table	doz. \$6.00
White Mountain	doz. \$5.00

**Potato—**

Saratoga	doz. \$7.00
White Mountain	doz. \$6.00

**Picks and Mattocks—**

List Feb. 23, 1899	70¢@75¢
Cronk's Handled Garden Mattock, per doz.	\$6.40

**Pinking Irons—**

See Irons, Pinking.

**Pins, Escutcheon—**

Brass	60@60¢@10¢
Iron, list Nov. 11, '85	60@60¢@10¢

**Pipe, Cast Iron Soil—**

Carload lots.	
Standard, 2-6 in.	60%
Extra Heavy, 2-6 in.	70%
Fittings	75%

**Pipe, Merchant—**

Carload lots.	
Steel.	
Blk. Galv. Blk. Galv.	
1/4 & 1/2 in.	68 1/2% 52 1/2% 50 1/2%
3/4 & 1 in.	72 1/2% 60 1/2% 70 1/2% 58 1/2%
2 & 2 1/2 in.	76 1/2% 66 1/2% 75 1/2% 65 1/2%
7 to 12 in.	71 1/2% 56 1/2% 70 1/2% 54 1/2%

**Pipe, Sewer—**

Carload lots.	
Standard Pipe and Fittings, 2 to 24 in.	
New England	71%
New York and New Jersey	74%
Maryland, Delaware, E. Pa.	78%
West, Pa. and West Va.	80%
Virginia	76%
Ohio, Michigan and Ky.	80%
Indiana	80%

NOTE—Carload lots are generally delivered.

**Pipe, Stove—**

Edwards' Nested Stove Pipe:	
5 in., per 100 joints	5.00
6 in., per 100 joints	7.50
7 in., per 100 joints	8.50

**Planes and Plane Irons—**

Wood Planes—	
Bench, first qual.	40¢@10¢
Bench, second qual.	50¢@10¢
Molding	33 1/2¢@10¢
Bailey's (Stanley R. & L. Co.)	50¢@10¢

Chapin-Stephens Co.:	
Bench, First Quality	40¢@10¢
Bench, Second Quality	50¢@10¢
Molding	33 1/2¢@10¢
Toy and German	40¢@10¢
Chapin's	60%
Ohio Tool Co.:	
Bench, First Quality	40¢@10¢
Bench, Second Quality	50¢@10¢
Molding	33 1/2¢@10¢
Adjustable Wood Bottom	60%
Union	60%

**Iron Planes—**

Bailey's (Stanley R. & L. Co.)	25¢@10¢@30¢
Chapin's Iron Planes	50¢@10¢
Miscellaneous Planes (Stanley R. & L. Co.)	20¢@10¢@20¢@10¢
Ohio Tool Co.'s Iron Planes	60%
Sargent's	60¢@10¢
Union	60%

**Plane Irons—**

Wood Bench Plane Irons	25¢@10¢@30¢
Buck Bros.	30%
Chapin-Stephens Co.	30¢@10¢
Ohio Tool Co.	30%
Stanley R. & L. Co.	20¢@10¢@20¢@10¢
L. & I. J. White	20¢@10¢

**Planters, Corn, Hand—**

Kohler's Eclipse	doz. \$8.50
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**Plates—**

Fellor	doz. \$2.00
Self-Sealing Pie Plates (S. B. & Co.)	doz. \$2.00

**Pliers and Nippers—**

Button Pliers	75¢@10¢@80¢
Gas Burner, per doz.	5 in., \$1.25
@ \$1.30; 6 in., \$1.45 @ \$1.50	
Gas Pipe, 7	8 10 12 in.
Acme Nippers	\$2.00 \$2.25 \$3.00
Cronk & Carrier Mfg. Co.	50¢@60¢@5¢
American Button	75¢@10¢
Cronk's Improved Button	60¢@10¢
Stub's Pattern	33 1/2%
Combination and others	33 1/2%
Heller's Farriers' Nippers	40¢@10¢@40¢@10¢
and Tools	

P. S. & W. Tinners' Cutting Nippers	30¢@10¢
Swedish Side, End and Diagonal Cutting Pliers	50%
Utica Drop Forge & Tool Co.	
Pliers and Nippers, all kinds	40%

**Plumbs and Levels—**

Chapin-Stephens Co.:	
Plumbs and Levels	30¢@10¢@10¢
Chapin's Imp. Brass Cor.	40¢@10¢@10¢
Pocket Levels	30¢@10¢@10¢
Diastion's Plumbs and Levels	70%
Diastion's Pocket Levels	70%
C. E. Jennings & Co.'s Iron	33 1/2%
C. E. Jennings & Co.'s Iron, Adjustable	40¢@10¢
Stanley R. & L. Co.	30¢@10¢@10¢
Stanley's Duplex	20¢@10¢@10¢
Woods' Extension	33 1/2%

**Poachers, Egg—**

Buffalo Steam Egg Poachers, No. 1, \$6.00; No. 2, \$9.00; No. 3, \$9.00; No. 4, \$12.00	50%
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**Points, Glaziers—**

Bulk and 1-lb. papers, lb. 8 1/2¢ @ 9 1/2¢	
1/2-lb. papers	lb. 9 1/2¢ @ 9 1/2¢
1/4-lb. papers	lb. 9 1/2¢ @ 10 1/2¢

**Pokes, Animal—**

Ft. Madison Hawkeye	doz. \$3.25
Ft. Madison Western	doz. \$4.00

**Police Goods—**

Manufacturers' Lists	25¢@25¢@5¢
Tower's	25%

**Polish—Metal—**

Prestoline Liquid, No. 1 (1/4 pt.)	25%
doz. \$5.00; No. 2 (1 qt.)	\$7.75
Prestoline Paste, 50 lb. cans	40¢@10¢
George William Hoffman:	
U. S. Metal Polish Paste, 3 oz. boxes	doz. \$0.40
1 lb. boxes	doz. \$1.25
1 lb. boxes	doz. \$2.25
U. S. Liquid, 8 oz. cans	doz. \$1.25
doz. \$1.25	
Barkeepers' Friend Metal Polish	doz. \$1.75
doz. \$1.75	
Wynn's White Silk, 1/2 pt. cans	doz. \$2.00

**Stove—**

Black Eagle Benzine Paste, 5 lb. cans	doz. \$10.40
Black Eagle, Liquid, 1/2 pt. cans	doz. \$7.50
Black Jack Paste, 1/2 lb. cans	doz. \$9.00
Black Kid Paste, 5 lb. cans	each \$0.65
Ladd's Black Beauty, gr. \$10.00	50%
Joseph Dixon's, gr. \$5.75	10%
Dixon's Plumbago	gr. \$2.50
Firestone	gr. \$2.50
Gem	gr. \$4.50
Japanese	gr. \$3.50
Jet Black	gr. \$3.50
Peerless Iron Enamel, 10 oz. cans	doz. \$1.50

Wynn's:	
Black Silk, 5 lb. pail	each \$0.70
Black Silk, 1/2 lb. box	doz. \$0.70
Black Silk, 5 oz. box	doz. \$0.75
Black Silk, 1/2 pt. liq.	doz. \$1.00

**Poppers, Corn—**

1 qt., Square	gro. \$9.00
1 qt., Round	gro. \$10.00
1 1/2 qt., Square	gro. \$11.00
2 qt., Square	gro. \$13.00

**Post Hole and Tree Augers and Diggers—**

See also Diggers, Post Hole, &amp;c.

**Posts, Steel—**

Steel Fence Posts, each, 5 ft., 42¢	
6 ft., 46¢; 6 1/2 ft., 48¢	
Steel Hitching Posts	each \$1.30

**Potato Parers—**

See Parers, Potato.

**Pots, Glue—**

Enamelled	doz. \$4.00
Tinned	doz. \$3.50

**Powder—**

In Canisters:	
Duck, 1 lb.	each 45¢
Fine Sporting, 1 lb.	each 75¢
Rifle, 1/2 lb.	each 15¢
Rifle, 1-lb.	each 25¢

King's Semi-Smokeless:	
Keg (25 lb. bulk)	\$6.50
Half Keg (12 1/2 lb. bulk)	\$3.50
Quarter Keg (6 1/4 lb. bulk)	\$1.90
Case 24 (1 lb. cans bulk)	\$1.50
Half case (1 lb. cans bulk)	\$1.50
King's Smokeless:	
Keg (25 lb. bulk)	\$12.00
Half Keg (12 1/2 lb. bulk)	6.25
Quarter Keg (6 1/4 lb. bulk)	3.25
Case 24 (1 lb. cans bulk)	14.00
Half case (1 lb. c. bk.)	7.25
Robin Hood Sm'less Shot Gun	50¢@20¢

**Presses—****Fruit and Jelly—**

Enterprise Mfg. Co.	20¢@25¢
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**Seal Presses—**

Morrill's No. 1	doz. \$20.00
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**Pruning Hooks and Shears**

See Shears.

**Pullers, Cork—**

Invincible Cork Puller	\$21.00
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**Pullers, Nail—**

Cyclops	50%
Miller's Falls, No. 3	doz. \$12.00
Morrill's No. 1, Nail Puller	doz. \$5.00
Pearson No. 1, Cyclops Spike Puller	each \$3.00
Pelican	doz. \$9.00
Scranton, Case Lots:	
No. 2B (large)	\$5.50
No. 3B (small)	\$5.00
Smith & Hemenway Co.:	
Diamond B, No. 2, case lots	doz. \$6.00
Diamond B, No. 3, case lots	doz. \$5.50
Giant No. 1	doz. \$15.00
No. 2	\$16.50
No. 3	\$15.00

**Pulleys, Single Wheel—**

Inch	2 2 1/2 3
Acme, doz.	\$0.55 \$1.15
Hay Fork, Swivel or Solid Eye	
doz., 4 in.	\$1.05 5 in., \$1.35
Inch	2 2 1/2 3
Hot House, doz.	\$0.70 \$1.25
Inch	1 1/2 1 3/4 2
Screw, doz.	\$0.16 \$1.23 \$1.30
Inch	1 1/2 2 2 1/2 3
Side, doz.	\$0.30 \$1.55 \$1.63
Inch	1 1/2 2 2 1/2 3
Tackle, doz.	\$0.30 \$1.55 \$1.63
Stowell's:	
Ceiling or End, Anti-Friction	60¢@10¢
Dumb Waiter, Anti-Friction	60¢@10¢
Electric Light	60%
Side, Anti-Friction	60¢@10¢

**Sash Pulleys—**

Common Frame: Square or Round End, per doz.	1 1/2 and 2 in.
Auger Morise, no Face Plate, per doz.	1 1/2 and 2 in.
Acme	1 1/2 in., 1 1/2¢; 2 in., 1 1/2¢
Fox-All-Steel, Nos. 3 and 1	2 in.
Grand Rapids All Steel Noiseless	50%
Idea	3 1/2 in., 1 1/2¢; 2 in., 1 1/2¢
No. 26, Troy	1 1/2 in., 1 1/2¢; 2 in., 1 1/2¢
Star	1 1/2 in., 1 1/2¢; 2 in., 1 1/2¢
Tackle Blocks—See Blocks.	

**Pumps—**

Cistern	60¢@60¢@10¢
Pitcher Spout	80¢@60¢@10¢
Wood Pumps, Tubing, &c.	45¢@50¢
Barnes Dbl. Acting (low list)	50¢@10¢
Barnes' Pitcher Spout	80%
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co.	\$16.00
Daisy Spray Pump	doz. \$7.20
Flint & Walling's Fast Mail Hand (low list)	55%
Flint & Walling's Fast Mail (low list)	55%
Flint & Walling's Fast Mail Pitcher	55%
National Specialty Mfg. Co., Measuring	\$6.00
Mechanical Sprayer	\$7.20
Myers' Pumps (low list)	50%
Myers' Power Pumps	50%
Myers' Pump Pumps	50%

**Pump Leathers—**

Plunger and Lower Valve—Per gro.	
Inch	2 2 1/2 3 3 1/2 4
	\$2.20 2.50 2.75 3.00
Inch	3 3 1/2 3 3/4 4 4 1/2 4 3/4
	\$3.30 3.60 3.85 4.10 4.40
Plunger Cup Leathers—Per 100:	
Inch	2 1/2 3 3 1/2 4
	\$2.75 3.85 5.00 6.00

**Punches—**

Saddlers' or Drive, good quality	doz. 50¢@75¢
Spring, single tube, good quality	\$1.75@2.00
Revolving (4 tubes)	doz. \$3.50@3.75

Bemis & Call Co.'s Cast St'l Drive	50%
Bemis & Call Co.'s Check	50%
Morrill's No. 1 (A. B. C.)	doz. \$15.50
No. 2	doz. \$22.50
Hercules	each \$7.50
Niagara Hollow Punches	40%
Niagara Solid Punches	55%
Steel Standard, H. & K. Mfg. Co.	50%
Tinners' Hollow, P. S. & W. Co.	35¢@35¢
Tinners' Solid, P. S. & W. Co.	doz. \$1.41

**Rail—Barn Door, &c.—**

Cast Iron Barn Door; Flange	
Serve Holes for Rd. Groove	
Wheels:	
1 1/2 2 2 1/2 3 3 1/2 4	
	\$1.70 \$2.10 \$3.00 100 feet.

Angular for Sq. Groove Wheels:	
Small. Med. Large.	
\$1.50 \$1.90 \$2.60 100 feet.	

**Sliding Door, Painted Iron—**

2 1/2 @ 2 3/4	
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**Sliding Door, Wrought Brass—**

1/4 in., lb., 36¢	30%
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**Altim Mfg. Co.:**

No. 1, Reliable Hgr. Track	ft. 5 1/2¢
No. 2, Reliable Hgr. Track	ft. 7¢

**Cronk's:**

Double Braced Steel Rail	ft. 3 1/2¢
O. N. T. Rail	2 1/2¢

**Griffin's:**

xxx, 100 ft., 1 x 3-16 in.	\$3.00
1 1/4 x 3-16 in., 350.	

**Hinged Hanger, 100 ft., 1 x 3-16 in.**

1 in., \$3.10; 1 1/4 x 3-16 in., \$3.60.	
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**Lane's:**

Hinged Track, 100 ft., 1 in., \$3.70;	
1 1/4 in., \$4.40.	

**O. N. T., 100 ft., 1 in., \$2.75; 1 1/4 in., \$3.50; 1 1/2 in., \$4.00.**



**Sisal, Tarred, Medium Lath**  
Yarn:  
Mixed ..... lb. 7 3/4¢  
Pure ..... lb. 9 3/4¢  
**Cotton Rope:**  
Best, 1/4-in. and larger ..... 14 1/2¢  
Medium, 1/4-in. and larger ..... 11 1/2¢  
Common, 1/4-in. and larger ..... 10 1/2¢  
**Jute Rope:**  
Thread No. 1, 1/4-in. & up, lb. 6 1/2¢  
Thread No. 2, 1/4-in. & up, lb. 5 1/2¢  
Old Colony Manila Transmission  
Rope ..... lb. 17 1/2¢

**Wire Rope—**  
Galvanized ..... 42 1/2¢ to 47 1/2¢  
Plain ..... 50¢ to 54 1/2¢

**Ropes, Hammocks—**  
Covert Mfg. Co.:  
Jute ..... 50¢ & 55¢  
Sisal ..... 35¢ & 40¢  
Covert Saddle Works ..... 50¢ & 55¢

**Rules—**  
Boxwood ..... 60¢ to 10¢ to 10¢  
Ivory ..... 35¢ to 10¢ to 35¢ to 10¢  
Chapin-Stephens Co.:  
Boxwood ..... 60¢ to 10¢ to 10¢  
Ivory ..... 35¢ to 10¢ to 10¢  
Miscellaneous ..... 50¢ to 10¢ to 10¢  
Combination ..... 55¢ to 10¢ to 10¢  
Stationers' ..... 10¢ to 10¢ to 10¢  
Keuffel & Esser Co.:  
Folding, Wood ..... 35¢ to 10¢  
Folding, Steel ..... 33 1/2¢ to 10¢  
Lufkin's Steel ..... 50¢ to 10¢  
Lufkin's Lumber ..... 60¢  
Stanley R. & L. Co.:  
Boxwood ..... 60¢ to 10¢ to 10¢  
Ivory ..... 35¢ to 10¢ to 10¢  
Upson Nut Co.:  
Boxwood ..... 60¢ to 10¢ to 10¢  
Ivory ..... 35¢ to 10¢ to 10¢ to 10¢

**Sash Balances—**  
See Balance, Sash.  
**Sash Locks—**  
See Locks, Sash.

**Sash Weights—**  
See Weights, Sash.

**Sausage Stuffers or Fillers**  
See Stuffers or Fillers, Sausage.

**Saw Frames—**  
See Frames, Saw.  
**Saw Sets—** See Sets, Saw.

**Saw Tools—** See Tools, Saw.

**Saws—**  
Atkins':  
Circular ..... 50¢  
Band ..... 50¢ to 10¢ to 10¢  
Cross Cut ..... 35¢ & 50¢  
Mulay, Mill and Drag ..... 50¢  
One-Man Saw ..... 40¢  
Wood Saws ..... 40¢  
Hand, Compass, &c. ..... 40¢  
Chapin-Stephens Co.:  
Turning Saws and Frames, 30 to 30 to 10¢  
Diamond Saw & Stamping Works:  
Sterling Kitchen Saws ..... 30¢ to 10¢ to 5¢  
Disston's:  
Circular, Solid and Ins'ted Tooth, 50¢  
Band, 2 to 14 in. wide ..... 60¢  
Band, 1/4 to 1 1/2 ..... 60¢  
Crosscut ..... 50¢  
Narrow Crosscut ..... 50¢  
Mulay, Mill and Drag ..... 50¢  
Framed Woodsaws ..... 35¢  
Wood Saw Blades ..... 35¢  
Wood Saw Rods ..... 25¢  
Hand Saws, Nos. 12, 99, 9, 16, d100 ..... 25¢  
D8, 120, 76, 7, 8 ..... 25¢  
Hand Saws, Nos. 7, 107, 107 1/2, 3, 1 ..... 25¢  
0, 0, Combination ..... 30¢  
Compass, Key Hole, &c. ..... 25¢  
Butcher Saws and Blades ..... 35¢  
C. E. Jennings & Co.'s:  
Back Saws ..... 25¢  
Butcher Saws ..... 30¢  
Compass and Key Hole Saws ..... 35¢ & 50¢  
Framed Wood Saws ..... 30¢  
Hand Saws ..... 20¢ to 2 1/2¢  
Wood Saw Blades ..... 35¢  
Millers Falls ..... 15¢ to 10¢  
Star Saw Blades ..... 15¢ to 10¢  
Peace & Richardson's Hand Saws ..... 30¢  
Simonds':  
Circular Saws ..... 50¢  
Crescent Ground Cross Cut Saws ..... 35¢  
One-Man Cross Cut Saws ..... 40¢ to 10¢  
Gang Mill, Mulay and Drag Saws ..... 50¢  
Band Saws ..... 50¢  
Back Saws ..... 25¢ to 25¢ to 7 1/2¢  
Butcher Saws ..... 35¢ to 35¢ to 7 1/2¢  
Hand Saws ..... 25¢ to 25¢ to 7 1/2¢  
Hand Saws, Bay State Brand ..... 45¢  
Compass, Key Hole, &c. 25¢ to 25¢ to 7 1/2¢  
Wood Saws ..... 35¢ to 35¢ to 7 1/2¢  
Springfield Mach. Screw Co.:  
Diamond Kitchen Saws ..... 40¢ to 10¢ to 50¢  
Butcher Saws ..... 35¢ to 40¢  
Wheeler, Madden & Clemon Mfg.  
Co.'s Cross Cut Saws ..... 50¢

**Hack Saws—**  
Atkins' Hack Saw Blades A A A ..... 25¢  
Disston's:  
Concave Blades ..... 25¢  
Keystone ..... 40¢  
Hack Saw Frames ..... 30¢  
Pittsburg File Works, The Best ..... 25¢  
C. E. Jennings & Co.'s:  
Hack Saw Frames, Nos. 175, 180 ..... 40¢ to 7 1/4¢  
Hack Saws, Nos. 175, 180, complete ..... 40¢ to 7 1/4¢  
Goodell's Hack Saw Blades ..... 40¢  
Griffin's Hack Saw Frames ..... 35¢ to 10¢ to 10¢  
Griffin's Hack Saw Blades ..... 35¢ to 10¢ to 10¢  
Springfield Mach. Screw Co.:  
Diamond Hack Saw Blades ..... 35¢  
Diamond Hack Saw Frames ..... 50¢  
Star Hack Saws and Blades ..... 15¢ to 10¢  
Sterling Hack Saw Blades ..... 30¢ to 10¢ to 5¢  
Sterling Hack Saw Frames ..... 30¢ to 10¢ to 5¢

**Scroll—**  
Barnes' No. 7 ..... 15¢  
Barnes' Scroll ..... 25¢  
Barnes' Velociped Power Scroll Saw  
without boring attachment ..... 18¢  
with boring attachment, 320 ..... 20¢  
Lester, complete, 100.00 ..... 15¢ to 10¢  
Rogers, complete, 40.00 ..... 15¢ to 10¢

**Sealers, Fish—**  
Covert's Saddlery Works ..... 60¢ to 10¢

**Scales—**  
Family, Turnbull's ..... 50¢ to 50¢ to 10¢  
Counter:

Hatch, Platform, 1/2 oz. to 4  
lbs. ..... doz. \$5.50  
Two Platforms, 1/2 oz. to 8  
lbs. ..... doz. \$16.00  
Union Platform, Plain, \$1.70 to \$1.90  
Union Platform, Stpd. \$1.85 to \$2.15  
Chatillon's:  
Eureka ..... 25¢  
Favorite ..... 40¢  
Crocers' Trip Scales ..... 50¢  
Chicago Scale Co.:  
The "Little Detective" ..... 25 lbs 50¢  
Union or Family No. 2 ..... 60¢  
Portable Platform (reduced list) ..... 50¢  
Wagon or Stock (reduced list) ..... 25¢ to 35¢  
"The Standard" Portables ..... 50¢  
"The Standard" R. R. and Wagon ..... 50¢

**Scrapers—**  
Box, 1 Handle ..... doz. \$2.00 to \$2.25  
Box, 2 Handle ..... doz. \$2.60 to \$2.85  
Ship ..... Light, \$2.00; Heavy, \$1.50  
Adjustable Box Scraper (S. R. & L.  
Co.), \$6.00 ..... 30¢ to 30¢ to 10¢  
Chapin-Stephens Co., Box ..... 50¢ to 10¢ to 10¢

**Screens, Window and  
Frames—**  
Flyer Pattern Screens, 60¢ to 50¢ to 5¢ to 2 1/2¢  
Maine Screen Frames ..... 40¢ to 10¢ to 5¢  
Perfection Screens ..... 60¢ to 50¢ to 5¢ to 2 1/2¢  
Phillips Screen Frames, 60¢ to 50¢ to 5¢ to 2 1/2¢  
See also Doors.

**Screws—Bench and Hand**  
Bench, Iron, doz. 1 in. ..... \$2.50 to 2.75  
1 1/4, \$3.00 to 3.25; 1 1/2, \$3.50 to 3.75  
Bench, W'd. Beech, doz. 30¢ to 30¢ to 5¢  
Hand, Wood ..... 30¢ to 30¢ to 5¢  
R. Bliss Mfg. Co., Hand, 30¢ to 30¢ to 10¢  
Chapin-Stephens Co., Hand, 30¢ to 30¢ to 10¢  
Ohio Tool Co., Bench and Hand, 30¢

**Coach, Lag and Hand Rail—**  
Lag, Cone Point, list Oct. 1, '99 ..... 75¢ to 20¢  
Coach, Gimlet Point, list  
Oct. 1, '99 ..... 75¢ to 15¢  
Hand Rail, list Jan. 1, '81 ..... 70¢ to 10¢ to 7 1/2¢

**Jack Screws—**  
Standard List ..... 75¢ to 10¢ to 80¢ to 5¢  
Millers Falls ..... 50¢ to 10¢ to 10¢  
Millers Falls, Roller ..... 50¢ to 10¢  
P. S. & W. ..... 50¢ to 50¢ to 5¢  
Sargent ..... 70¢ to 10¢  
Sweet Iron Works ..... 75¢ to 10¢ to 80¢ to 5¢

**Machine—**  
List Jan. 1, '98:  
Flat or Round Head, Iron ..... 50¢ to 50¢ to 10¢  
Flat or Round Head, Brass ..... 50¢ to 50¢ to 10¢

**Set and Cap—**  
Set (Iron or Steel) ..... 80¢ to 80¢ to 10¢ to 10¢  
Sq. Hd. Cap ..... 75¢ to 75¢ to 10¢  
Hex. Hd. Cap ..... 75¢ to 75¢ to 10¢  
Rd. or Filler Hd. Cap ..... 65¢ to 65¢ to 10¢

**Wood—**  
List July 23, 1903.  
Manufacturers' printed discounts:  
Flat Head, Iron ..... 87 1/2¢ to 10¢ to 10¢  
Round Head, Iron ..... 85¢ to 10¢ to 10¢  
Flat Head, Brass ..... 85¢ to 10¢ to 10¢  
Round Head, Brass ..... 80¢ to 10¢ to 10¢  
Flat Head, Bronze ..... 77 1/2¢ to 10¢ to 10¢  
Round Head, Bronze ..... 75¢ to 10¢ to 10¢  
Drive Screws ..... 87 1/2¢ to 10¢

**Scroll Saws—**  
See Saws, Scroll.  
**Scythes—** Per doz.  
Prices announced for next season:  
Clipper Pattern, Grass ..... \$6.20  
Full Polished, Clipper ..... \$6.75  
Grain ..... \$8.00  
Clipper, Grain ..... \$8.25  
Weed and Bush ..... \$6.25

**Seeders, Raisin—**  
Enterprise ..... 25¢ to 30¢

**Sets—Awl and Tool—**  
Brad Awl and Tool Sets:  
Wood Handle, 14 Awls ..... doz. \$2.00 to 2.25  
Tools ..... doz. \$2.50 to 2.60  
Allen's Sets, Awl and Tools:  
No. 20, 3 doz. \$10.00 ..... 50¢ to 10¢ to 10¢  
Fray's Adj. Tool Handles, Nos. 1, 12; 2, 18; 3, 12; 4, 9; 5, 7 ..... 50¢  
C. E. Jennings & Co.'s Model Tool  
Holders ..... 30¢  
Millers Falls Adj. Tool Handles, No. 1, 12; No. 4, 12; No. 5, 18 ..... 15¢ to 10¢  
Stanley's Excelior:  
No. 1, 7.50; No. 2, 4.00; No. 3, 5.50 ..... 30¢ to 30¢ to 10¢ to 10¢

**Garden Tool Sets—**  
Ft. Madison Three Plows, Hoe, Rake  
and Shovel ..... doz sets \$9.00

**Nail—**  
Square ..... per gro. \$2.25 to \$2.50  
Round, Blk. and Pol., assorted ..... gro. \$1.80 to \$2.00  
Octagon ..... gro. \$3.50 to \$3.75  
Buck Bros. ..... doz. 25¢  
Cannon's Diamond Point, 3/4 gro. \$12.25  
Mayhew's ..... gro. \$9.00  
Snell's Cannon's Diamond Point ..... gro. \$7.20  
Snell's Cor'gated, Cup Pt. ..... gro. \$7.20  
Snell's Knurled, Cup Pt. ..... gro. \$7.20  
Springfield Mach. Screw Co.:  
Diamond Knurled Cup Pt. ..... gro. \$7.50

**Rivet—**  
Regular list ..... 75¢ to 75¢ to 10¢

**Saw—**  
Aiken's:  
Genuine ..... 50¢ to 10¢  
Imitation ..... 50¢ to 10¢

Atkin's:  
Criterion ..... 40¢  
Adjustable ..... 40¢  
Bemis & Call Co.'s:  
Cross Cut ..... 30¢  
Plate ..... 20¢  
Disston's Star and Monarch ..... 25¢  
Morrill's No. 1, \$15.00 ..... 50¢  
Nos. 3 and 4, Cross Cut, \$20.63 ..... 50¢  
No. 5, Mill, \$30.00 ..... 50¢  
Nos. 10, 11, 95, \$15.63 ..... 50¢  
No. 1 Old Style, \$10.00 ..... 50¢  
Special, \$16.25 ..... 50¢  
Giant Royal, Cross Cut ..... doz. \$8.50  
Royal, Hand ..... doz. \$5.00  
Taintor Positive ..... doz. \$6.75

**Shaving—**  
Fox Shaving Sets, No. 30 ..... doz., net, \$24.00

**Sharpeners, Knife—**  
Chicago Wheel & Mfg. Co. .... 65¢

**Shaves, Spoke—**  
Iron ..... doz. \$1.00 to \$1.15  
Wood ..... doz. \$1.75 to \$2.00  
Bailey's (Stanley R. & L. Co.) ..... 30¢ to 30¢ to 10¢ to 10¢  
Chapin-Stephens Co. .... 30¢ to 30¢ to 10¢ to 10¢  
Goodell's ..... doz. \$9.00 ..... 15¢ to 10¢  
Wood's Ft and F2 ..... 50¢

**Shears—**  
Cast Iron, 7 8 9 in.  
Best ..... \$16.00 18.00 20.00 gro.  
Good ..... \$13.00 15.00 17.00 gro.  
Cheap ..... \$5.00 6.00 7.00 gro.  
Straight Trimmers, &c.:  
Best quality, Jap. .... 70¢ to 70¢ to 10¢  
Best quality, Nickel ..... 60¢ to 60¢ to 10¢  
Fair quality, Jap. .... 80¢ to 80¢ to 10¢  
Fair quality, Nickel ..... 75¢ to 75¢ to 10¢  
Tailors' Shears ..... 40¢ to 40¢ to 10¢  
Acme and East Shears ..... 40¢ to 40¢ to 10¢  
Heinrich's Tailor's Shears ..... 40¢ to 40¢ to 10¢  
Wilkinson's Hedge, 1900 list ..... 45¢  
Wilkinson's Branch, Lawn & Border, 40¢  
Wilkinson's Sheep, 1900 list ..... 50¢

**Tinners' Snips—**  
Steel Blades ..... 20¢ to 50¢ to 10¢ to 10¢  
Steel Laid Blades ..... 40¢ to 10¢ to 10¢  
Forged Handles, Steel Blades, Berlin  
40¢ to 40¢ to 10¢  
Heinrich's Snips ..... 40¢  
Jennings & Griffin Mfg. Co.'s 6 1/2 to  
10 in. .... 50¢  
Niagara Snips ..... 40¢  
P. S. & W. Co. .... 20¢

**Pruning Shears and Tools**  
Cronk's Grape Shears ..... 33 1/2¢  
Cronk's Pruning Shears ..... 33 1/2¢  
Disston's Combined Pruning Hook  
and Saw, 3/4 doz. \$18.00 ..... 25¢  
Disston's Pruning Hook, 3/4 doz.  
\$12.00 ..... 25¢  
John T. Henry Mfg. Co.:  
Pruning Shears, all gauges, 40¢ to 40¢ to 5¢  
Orange Shears, all gauges, 50¢ to 10¢ to 50¢ to 20¢  
Grape ..... 40¢ to 10¢ to 50¢  
Tree Pruners ..... 75¢  
P. S. & W. Co. .... 33 1/2¢

**Sheaves—Sliding Door—**  
Stowell's Anti-Friction ..... 50¢  
Patent Roller, Hatfield's, Sargent's  
list ..... 70¢ to 10¢  
Reading ..... 60¢  
R. & E. list ..... 30¢  
Wrightsville Hatfield Pattern ..... 30¢

**Sliding Shutter—**  
Reading list ..... 45¢ to 20¢  
R. & E. list ..... 33 1/2¢  
Sargent's list ..... 50¢ to 10¢

**Shells—Shells, Empty—**  
Brass Shells, Empty:  
First quality all gauges ..... 60¢ to 5¢  
Climax, Club, Rival, 10 and 12  
gauge ..... 65¢ to 5¢  
Paper Shells, Empty:  
Acme, Ideal, Leader, New Rapid,  
Magic, 10, 12, 16 and 20 gauge, 25¢ to 65¢  
Blue Rival, New Climax, Challenge,  
Monarch, Defiance, Repeater, Yellow  
Rival, 10, 12, 16 and 20 gauge, 20¢  
Climax, Union, League, New Rival,  
10 and 12 gauge ..... 25¢  
Climax, Union, League, New Rival,  
14, 16 and 20 gauge (\$7.50 list) ..... 20¢  
Expert, Metal Lined and Pigeon, 10,  
12, 16 and 20 gauge ..... 33 1/2¢ to 5¢  
Robin Hood, Low Brass ..... 20¢ to 10¢  
Robin Hood, High Brass ..... 30¢ to 10¢

**Shells, Loaded—**  
Loaded with Black Powder ..... 40¢  
Loaded with Smokeless Powder,  
medium grade ..... 40¢ to 5¢  
Loaded with Smokeless Powder,  
high grade ..... 40¢ to 10¢ to 10¢  
Robin Hood Smokeless Powder:  
Robin Hood, Low Brass ..... 50¢  
Comets, High Brass ..... 50¢ to 10¢ to 5¢

**Shoes, Horse, Mule, &c.—**  
F.o.b. Pittsburgh:  
Iron ..... per keg \$4.00  
Steel ..... per keg \$3.75  
Burdens', all sizes ..... per keg \$3.90

**Shot—**  
Drop, up to B, 25-lb. bag ..... \$1.65  
Drop, B and larger ..... per 25-lb. bag, \$1.90  
Buck, 25-lb. bag ..... \$1.90  
Chilled, 25-lb. bag ..... \$1.90

**Shovels and Spades—**  
Association List, Nov. 15, 1902, 40¢

**Sieves and Sifters—**  
Hunter's Imitation ..... gro. \$10.50 to \$11.00  
Hunter's Genuine ..... per gro. \$12.00 to \$12.50  
Buffalo Metallic Blued, S. S. Co., 3/4 gr.:  
14 1/2 16 18 20  
\$13.20 \$13.50 \$14.00 \$14.40  
Shaker (Barley's Pat.) Flour Sifter  
3/4 doz. \$2.00 ..... 20¢

**Sieves, Seamless Metallic**  
Per dozen:  
Mesh ..... 1 1/2 16 18 20  
Iron Wire ..... \$1.05 1.05 1.10 1.20  
Tinned Wire ..... \$1.15 1.15 1.20 1.30

**Sieves, Wooden Rim—**  
Nested, 10, 11 and 12 Inch.  
Mesh 18, Nested ..... doz. \$0.90 to 0.95  
Mesh 20, Nested ..... doz. \$1.00 to 1.05  
Mesh 24, Nested ..... doz. \$1.30 to 1.40

**Sinks, Cast Iron—**  
Standard list ..... 60¢ to 60¢ to 10¢  
NOTE.—There is not entire uniformity  
in lists used by jobbers.

**Skins, Wagon—**  
Cast Iron ..... 80¢ to 10¢ to 80¢ to 10¢ to 10¢  
Steel ..... 40¢ to 40¢ to 10¢

**Slates, School—**  
Factory Shipments.  
"D" Slates ..... 50¢ to 50¢ to 10¢  
Eureka, Unexcelled Noiseless ..... 60¢ to 5¢ tens  
Victor A, Noiseless ..... 60¢ to 5¢ tens & 5¢

**Slaw Cutters—** See Cutters.

**Snaps, Harness—**  
German ..... 40¢ to 40¢ to 10¢  
Covert Mfg. Co.:  
Derby ..... 30¢ to 5¢ to 2¢  
High Grade ..... 45¢  
Jockey ..... 30¢ to 10¢  
Trojan ..... 30¢ to 5¢ to 2¢  
Yankee ..... 30¢ to 5¢ to 2¢  
Yankee, Roller ..... 30¢ to 5¢ to 2¢

**Covert's Saddlery Works:**  
Crown ..... 60¢  
German ..... 60¢  
Model ..... 60¢  
Triumph ..... 60¢  
Oneida Community:  
Solid Swivel ..... 60¢  
Sargent's Patent Guarded ..... 60¢ to 10¢

**Snaths—**  
Scythe ..... 50%

**Snips, Tanners—** See Shears.

**Spoons and Forks—**  
Silver Plated—

Good Quality ..... 50¢ to 10¢ to 60¢ to 5¢  
Cheap ..... 60¢ to 60¢ to 10¢  
International Silver Co.:  
1847 Rogers Bros. and Rogers &  
Hamilton ..... 40¢ to 10¢  
Rogers & Bro., William Rogers'  
Eagle Brand ..... 50¢ to 10¢  
Anchor Rogers Brand ..... 60¢  
Wm. Rogers & Son ..... 60¢ to 10¢

**Miscellaneous—**  
German Silver ..... 60¢ to 60¢ to 5¢  
Cataugus Cutlery Co.:  
Senece Silver ..... 50%

**Tinned Iron—**  
Teas ..... per gro. 45¢ to 50¢  
Tables ..... per gro. \$0.90 to \$1.00

**Springs—Door—**  
Chicago (Coil) ..... 40¢ to 10¢  
Gem (Coil) ..... 20¢  
Pullman (Coil) ..... 20¢  
Reliance (Coil) ..... 40¢ to 10¢  
Star (Coil) ..... 20¢  
Torrey's Rod, 20 in. ..... 30¢ to 10¢  
Victor (Coil) ..... 50¢ to 10¢ to 10¢

**Carriage, Wagon, &c.—**  
1 1/4 in. and Wider: Per lb.  
Black ..... 40¢ to 10¢  
Half Bright ..... 40¢ to 10¢  
Bright ..... 40¢ to 10¢  
Painted Seat Springs:  
1 1/4 x 2 x 26 ..... per pr. 42¢  
1 1/4 x 3 x 28 ..... per pr. 70¢

**Sprinklers, Lawn—**  
Enterprise ..... 25¢ to 30¢  
Philadelphia No. 1, 3/4 doz. \$12; No.  
2, \$15; No. 3, \$24 ..... 30¢

**Squares—**  
Nickel plated, } List Jan. 5, 1900,  
Steel and Iron, } 75¢ to 75¢ to 5¢  
Rosewood Hdl. Try Square and  
T-Bevels ..... 60¢ to 10¢ to 10¢ to 70¢  
Iron Hdl. Try Squares and T-  
Bevels ..... 40¢ to 10¢ to 10¢ to 10¢ to 10¢  
Disston's Try Sq. and T-Bevels ..... 70¢  
Winterbottom's Try and Miter ..... 40¢ to 10¢ to 10¢ to 10¢ to 10¢

**Squeezers, Lemon**  
Wood, Common, gro., No. 0,  
\$5.25 to \$5.50; No. 1, \$6.25 to \$6.50.  
Wood, Porcelain Lined:  
Cheap ..... doz. \$1.00  
Good Grade ..... doz. \$1.25  
Tinned Iron ..... doz. \$0.75 to \$1.25  
Iron, Porcelain Lined ..... doz. \$1.75

**Staples—**  
Barbed Blind ..... lb. 6¢ to 6 1/2¢  
Electricians', Association list ..... 80¢ to 10¢ to 10¢ to 10¢  
Fence Staples, Plain, \$2.25; Gal-  
vanized ..... \$2.55  
Poultry Netting Staples ..... per lb. 3 1/4¢ to 3 1/2¢  
Grand Crossing Tack Co.'s list ..... 80¢ to 10¢

**Steels, Butchers—**  
Dick's ..... 30¢  
Foster Bros. ..... 30¢  
C. & A. Hoffmann's ..... 40¢

**Steelyards—** 30¢ to 30¢ to 10¢

**Stocks and Dies—**  
Blacksmiths' ..... 50¢ to 50¢ to 10¢  
Curtis Rev'ble Ratchet Die Stock ..... 25¢  
Derby Screw Plates ..... 25¢  
Gardner Die Stocks No. 1 ..... 50¢  
Gardner Die Stocks, larger sizes ..... 40¢  
Green River ..... 25¢  
Lightning Screw Plate ..... 25¢  
Little Giant ..... 25¢  
Reese's New Screw Plates ..... 25¢

**Stone—Scythe Stones—**  
Chicago Wheel & Mfg. Co.:  
Gem Corundum, 10 in. ..... \$2.00 per  
gro., 12 in. ..... \$10.00  
Norton Emery Scythe Stones:  
Less than gross lots ..... per gro. \$9.00  
One gross or more ..... per gro. \$7.20  
Lots of 10 gross or more ..... per gro. \$6.00

Pike Mfg. Co., 1901 list:  
Black Diamond S. S. 3/4 gro. \$12.00  
Lamotte S. S. 3/4 gro. \$11.00  
White Mountain S. S. 3/4 gro. \$10.00  
Green Mountain S. S. 3/4 gro. \$9.00  
Extra Indian Pond S. S. 3/4 gro. \$7.50  
No. 1 Indian Pond S. S. 3/4 gro. \$7.00  
No. 2 Indian Pond S. S. 3/4 gro. \$4.50  
Leader Red End S. S. 3/4 gro. \$1.50  
Emerald and Corundum 10 in. 3/4 gro. \$9.00  
Pure Corundum, 10 in. 3/4 gro. \$12.00  
Crescent 3/4 gro. \$7.00  
Emerald Scythe Rifles, 2 Coat, \$10  
Emerald Scythe Rifles, 4 Coat, \$12  
Balance of 1904 list 33 1/2 %

### Oil Stones, &c.—

Chicago Wheel & Mfg. Co., 1901 list:  
Gem Corundum Oil, Double Grit, 50 %  
Gem Corundum Aze, Single or  
Double Grit, 55 %  
Gem Corundum Razor Hones, 50 %  
Pike Mfg. Co., 1901 list:  
Arkansas St. No. 1, 3 to 5 in. \$2.50  
Arkansas St. No. 2, 5 to 8 in. \$3.50  
Arkansas Slips No. 1, \$4.00  
Lily White Washita, 4 to 8 in. \$6.00  
Rosy Red Washita, 4 to 8 in. \$6.00  
Washita St., Extra, 4 to 8 in. \$5.00  
Washita St., No. 1, 4 to 8 in. \$4.00  
Washita St., No. 2, 4 to 8 in. \$3.00  
Lily White Slips, 90 %  
Rosy Red Slips, 90 %  
Washita Slips, Extra, 80 %  
Washita Slips, No. 1, 70 %  
Washita Slips, No. 2, 40 %  
India Oil Stones (entire list), 33 1/2 %  
Quickcut Emery and Corundum Oil  
Stone, Double Grit, 33 1/2 %  
Quickcut Emery and Corundum Aze  
Stone, Double Grit, 33 1/2 %  
Quickcut Emery Rubbing Bricks, 33 1/2 %  
Hindustan No. 1, R. G. lar. 3/4 lb. 8c  
Hindustan No. 1, Small, 1/4 lb. 10c  
Aze Stones (all kinds), 33 1/2 %  
Turkey Oil Stones, Extra, 5 to  
8 in., 10c  
Queer Creek Stones, 4 to 8 in., 20c  
Queer Creek Slips, 40c  
Sand Stone, 6c  
Belgian, German and Swaty Razor  
Hones, 50 %  
Natural Grit Carving Knife  
Hones, 30c  
Quick Edge Pocket Knife  
Hones, 20c  
Mounted Kitchen Sand Stone,  
1/4 doz. \$1.50

### Stoners, Cherry—

Enterprise 25c/30c

### Stoppers, Bottle—

Victor Bottle Stoppers, 3/4 doz. \$9.00

### Stops—Bench—

Millers Falls, 15c/10c  
Morrill's, 3/4 doz. No. 1, \$10.00, 50c  
Morrill's, No. 2, \$12.50, 50c

### Door—

Chapin-Stephens Co., 60c/60c/10c

### Plane—

Chapin-Stephens Co., 20c

### Straps—Box—

Cary's Universal, case lots, 20c/10c/10c

### Hame—

Covert's Saddlery Works, 60c/10c

### Stretchers, Carpet—

Cast Iron, 8 1/2 Points, doz. 55c/60c

### Socket—

Excelsior Stretcher and Tack Ham-  
mer Combined, 3/4 doz. \$6.00, 20c

### Stuffers, Sausage—

Enterprise Mfg. Co., 25c/25c/7 1/2 %  
National Specialty Co., list Jan. 1,  
1902, 30c/5c

### Sweepers, Carpet—

National Sweepers Co., 3/4 doz.  
Auditorium Roller Bearing (26 in.  
case), Nickel, \$54.00  
Mammoth Roller Bearing (30 in.  
case), Nickel, \$60.00  
Marion Roller Bearing, regular  
finishes, full Nickel, \$24.00  
Marion Queen Roller Bearing, full  
Nickel, \$24.00  
Monarch Roller Bearing, N'kel, \$20.00  
Monarch Roller B'g, Jap'ned, \$20.00  
Transparent Roller Bearing, Plate  
Glass Top, Nickel, \$36.00  
Monarch Extra Roller Bearing  
(17-in. case), Nickel, \$36.00  
Monarch Extra Roller Bearing  
(17-in. case), Japanned, \$33.00  
National Queen, Fancy Veneers, \$27.00  
Perpetual, Regular B'g's, \$20.00  
Perpetual, Regular B'g's, Jap, \$18.00

NOTE—Rebates: 50c per dozen on  
three-dozen lots; \$1 per dozen on five-  
dozen lots; \$2 per dozen on ten-dozen  
lots; \$1.50 per dozen on twenty-five-dozen  
lots

### Tacks, Brads, &c.—

List Jan. 15, '99.

Carpet Tacks, 90c/30c/10c

American Cut Tacks, 90c/25c

Succedee Cut Tacks, 90c/30c/10c

Succedee Upholsterers' Tacks, 90c/30c/10c

Gimp Tacks, 90c/30c/10c

Lace Tacks, 90c/30c/10c

Trimmers' Tacks, 90c/30c/10c

Looking Glass Tacks, 70c/10c/5c

Bill Posters' and Railroad  
Tacks, 90c/30c/10c

Hungarian Nails, 90c/30c/10c

Common and Patent Brads, 90c/30c/10c

Trunk and Clout Nails, 80c/10c

NOTE—The above prices are for  
Straight Weights. An extra 5c is given  
on Star Weights and an extra 10c on  
Standard Weights.

### Miscellaneous—

Double Pointed Tacks, 90c/6c or 7 tens

Steel Wire Brads, R. & E. Mfg. Co.,  
list, 50c/10c/60c

See also Nails, Wire.

### Tanks, Oil—

Each.  
Emerald, S. S. & Co., 30-gal. \$3.40  
Emerald, S. S. & Co., 60-gal. \$4.25  
Queen City, S. S. & Co., 30-gal. \$3.65  
Queen City, S. S. & Co., 60-gal. \$4.50

### Tapes, Measuring

American Asses' Skin, 40c/10c/50 %  
Patent Leather, 25c/30c/60 %  
Steel, 40c/10c/10 %  
Chesterman's, 25c/25c/60 %  
Eddy Asses' Skin, 40c/10c/50 %  
Eddy Patent Leather, 25c/30c/60 %  
Eddy Steel, 40c/10c/10 %  
Keuffel & Esser Co.:  
Favorite, Ass Skin, 40c/10c/50 %  
Favorite, Duck and Leather, 25c/30c/60 %  
Metallic and Steel, lower list, 35c/35c/60 %

### Pocket

Lufkin's:  
Asses' Skin, 40c/10c/50 %  
Metallic, 30c/30c/60 %  
Patent Bend, Leather, 25c/30c/60 %  
Pocket, 40c/10c/10 %  
Steel, 33c/33c/60 %

### Teeth, Harrow

Steel Harrow Teeth, plain or  
headed, 3/4-inch and larger, ...  
per 100 lbs. \$3.00

### Thermometers—

Tin Case, 80c/10c/80c/10c/5 %

### Ties, Bale—Steel Wire

Single Loop, 80c/2 1/2 %

### Monitor, Cross Head, &c.

70c

### Brick Ties—

Niagara Brick Ties, 25c/10 %

### Tinners' Shears, &c.

See Shears, Tinners', &c.

### Tinware—

Stamped, Japanned and Pieced, sold  
very generally at net prices.

### Tips, Safety Pole—

Covert's Saddlery Works, 60c/10c

### Tire Benders, Upsetters, &c.

See Benders and Upsetters, Tire.

### Tools—Coopers'—

L. & I. J. White, 20c/20c/5 %

### Hay—

Myers' Hay Tools, 50c

Stowell's Hay Carriers, 50c

Stowell's Hay Forks, 50c

Stowell's Fork Pullers, 50c

### Saw—

Atkins' Cross Cut Saw Tools, 40c

Simonds' Improved, 33 1/2 %

Simonds' Crescent, 25c

### Ship—

L. & I. J. White, 25c

### Transom Lifters—

See Lifters, Transom.

### Traps—Fly—

Balloon, Globe or Acme, doz.  
\$1.15c/\$1.25; gro. \$1.15c/\$1.20

Harper, Champion or Paragon,  
doz. \$1.25c/\$1.40; gro. \$1.30c/\$1.50

### Game—

Oneida Pattern, 75c/10c/75c/10c/5 %

Newhouse, 45c/45c/5 %

Hawley & Norton, 65c

Victor and Oneida, 70c/10c/70c/10c/5 %

O. C. Jump (Blake Pat.), 60c/50c/60c/10 %

### Mouse and Rat—

Mouse, Wood, Choker, doz. holes  
8 1/4c/9c

Mouse, Round or Square Wire,  
doz. 85c/90c

Marty French Rat and Mouse Traps  
(Genuine), 30c/5c

No. 1, Rat, each \$1.21; 3/4 doz. \$13.25

No. 3, Rat, 3/4 doz. \$6.50; case of 50,  
\$7.75 doz.

No. 3 1/2, Rat, 3/4 doz. \$5.25; case of 72,  
\$6.75 doz.

No. 4, Mouse, 3/4 doz. \$3.85; case of 150,  
\$5.77 doz.

No. 5, Mouse, 3/4 doz. \$3.00; case of 150,  
\$4.25 doz.

### Trimmers, Spoke—

Wood's E 1, 50c

### Trowels—

Disston Brick and Pointing, 30c

Disston Plastering, 25c

Disston "Standard Brand" and Gar-  
den Trowels, 35c

Kohler's Steel Garden Trowels, 5 in.,  
3/4 doz. \$3.80

Kohler's Steel Garden Trowels, 6 in.,  
3/4 doz. \$6.00

Never-Break Steel Garden Trowels,  
3/4 doz. \$6.00

Rose Brick and Plastering, 25c/5c

Woodrough & McParlin, Plastering, 25c

### Trucks, Warehouse, &c.—

B. & L. Block Co.:  
New York Pattern, 50c/10c

Western Pattern, 60c/10c

Handy Trucks, 3/4 doz. \$16.00

Grocery, 3/4 doz. \$15.00

Daisy Stove Trucks, Improved Pat-  
tern, 3/4 doz. \$18.50

McKinney Trucks, each \$10.00

Model Store Trucks, 3/4 doz. \$18.50

### Tubs, Wash—

No. 1, 2 1/2 5 1/2 6 00

Galvanized, per doz. \$4.75 5 25 6 00

Galvanized Wash Tubs (S. S. & Co.):  
No. 1, 2 3 10 20 30

Per doz., net \$5.70 6 30 7 20 6 00 7 20 8 10

### Twine, Miscellaneous—

Flax Twine: BC. B.  
No. 9, 1 1/4 and 1 1/2-lb. Balls, 22c/24c

No. 12, 1 1/4 and 1 1/2-lb. Balls, 18c/20c

No. 18, 1 1/4 and 1 1/2-lb. Balls, 16c/18c

No. 24, 1 1/4 and 1 1/2-lb. Balls, 16c/18c

No. 36, 1 1/4 and 1 1/2-lb. Balls, 15c/17c

### Chalk Line, Cotton

1/2-lb. Balls, 30c

Cotton Mops, 6, 9, 12 and 15 lb.,  
to doz., 9 1/4c/11c

Cotton Wrapping, 5 Balls to lb.,  
according to quality, 13 1/2c/20c

American 2-Ply Hemp, 1/4 and  
1/2-lb. Balls, 13c/14c

### American 3-Ply Hemp, 1-lb.

Balls, 13c/14c

India 2-Ply Hemp, 1/4 and 1/2-lb.

Balls (Spring Twine), 8c

India 3-Ply Hemp, 1-lb. Balls, 7c/8c

India 3-Ply Hemp, 1 1/2-lb. Balls, 6c/7c

2, 3, 4 and 5-Ply Jute, 1/2-lb. Balls, 9c/10c

Mason Line, Linen, 1/2-lb. Bls. 46c

No. 26 1/2 Mattress, 1/4 and 1/2-lb. Balls, 37c

Wool, 3 to 6 ply, B 1/4c/4 1/2c

### Vises—

Solid Box, 60c/10c/60c/10c/10 %

### Parallel—

Athol Machine Co.:  
Simpson's Adjustable, 40c

Standard, 40c

Amateur, 25c

Columbian Hdw. Co., 40c

Emmert Universal:  
Pattern Makers' No. 1, \$15.00; No. 2,  
\$12.50; No. 3, \$10.00.

Machinist and Tool Makers' No. 4,  
\$12.50; No. 5, \$7.00; No. 6, \$10.00;

No. 10, \$21.50.

Jewelers' No. 7, \$4.00

Fisher & Norris Double Screw, 15c/10 %

Holland's:  
Machinists', 40c/40c/5 %

Keystone, 65c/50c/70 %

Lewis Tool Co., 20c/30c

Merrill's, 20c

Millers Falls, 60c/10c

Massey Vise Co.:  
Climber, 40c

Perfect, 20c

Lightning Grip, 20c

Parser's:  
Victor, 20c/25c

Regulars, 20c/25c

Vulcan, 40c/45c

Combination Pipe, 55c/60c

Prentiss Universal:  
Sargent's, 40c

Smith & Hemenway Co.:  
Machinists', 40c

Jewelers', 33 1/2 %

Snediker's X. L., 33 1/2 %

Stephens, 33 1/2 %

### Saw Filers

Disston's D 3 Clamp and Guide, 3/4  
doz. \$30.

Perfection Saw Clamps, 3/4 doz., \$5.00

Reading, 60c

Wentworth's Rubber Jaw, Nos. 1,  
2 and 3, 35c/50c

### Wood Workers—

Massey Vise Co.:  
Lightning Grip, 15c

Perfect, 15c

Wymark's Gordon's Quick Action, 6  
in., \$6.00; 9 in., \$7.00; 14 in., \$8.00.

### Miscellaneous

Signal & Keeler Combination Pipe  
Vise, 60c/10c

Holland's Combination Pipe, 60c/60c/5 %

Massey's Quick Action Pipe, 40c

Parke's Combination Pipe:  
87 Series, 60c

187 Series, 60c/5c

No. 870, 40c

### Wads—Price per M.

B. E., 11 up, 60c

B. E., 9 and 10, 70c

B. E., 8, 80c

B. E., 7, 80c

P. E., 11 up, \$1.00

P. E., 9 and 10, 1.25

P. E., 8, 1.50